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Urges International Understanding

Judge Gary Recommends Cooperation with Foreign Steel
Interests—Queen Marie Pleads for World Amity—
Institute Banquet Is Colorful Affair

"NOWADAYS, no country really can exist without other countries. . . . What we need in the world today is the real feeling of peace and friendship. As long as we have not that, we shall never be able to build."

These words from the mouth of her majesty, Queen Marie of Rumania, who was guest of honor at the banquet of the American Iron and Steel Institute, sounded the keynote of the fall meeting of that body, which was held at the Commodore Hotel, New York, Oct. 22. Both by reason of the presence of foreign guests, which, besides the queen, included Dr. August Thyssen, son of the late German steelmaster of the same name, and also because of the recent formation of the European steel cartel more than usual attention was given to international problems.

In addressing the opening session of the institute in the morning, President Elbert H. Gary chose as his subject, "Friendly Cooperation." He pointed to the passing of destructive competition in the American steel industry and the progress which has been made in the direction of conciliation and cooperation, and he recommended a similar attitude of good will and friendship toward world business relations, reinforced if necessary, by international conference and open discussion. With Government sanction, a fair understanding can be reached with foreign business interests, he believes. In making this suggestion it was evident that Judge Gary had the European steel cartel in mind, although he did not specifically name it. President Gary's remarks were, in part, as follows:

"It is appropriate to congratulate ourselves and each other on what the iron and steel industry of the United States has accomplished during the last 20 years or more in the direction of conciliation and cooperation, perfectly proper, as indicated by the later decisions of the courts and Governmental administrators and speakers of the highest intelligence and renown. Everyone present will remember the days when the steelmasters of this country were engaged in industrial war; when the hand of the steelmaker was raised against his brother; when practically, in the steel business, might made right; when the Golden Rule was subordinated to the supposed pecuniary, if temporary, success of might and strength; when jealousy, discord and brutal antagonism prevailed; and all this to the ultimate loss of all who were engaged in the strife. . . .

Suggests Policy of Conciliation in World Business Relations

"The millenium has not arrived. We probably shall not see it in the near future, but conditions all over the world are improving. People, on the average, are growing better; and they are becoming more intelligent and better educated. This makes for legitimate advancement, for prosperity and happiness. Adversity result-

ing from the world war and contention, has humbled the vast majority of the people and uplifted their souls. The international conferences which have been held during the last two years, including especially the one before the League of Nations, heretofore mentioned, have had a striking effect upon the minds of the people all over the world. . . .

"We have heard recently of considerable discussion relating to anticipated competition between the iron and steel manufacturers of the United States and their foreign competitors; but it is believed that should it become necessary an international conference would be held between all these interests, and a full, open discussion indulged in, after which a fair understanding could be reached. Of course, no agreement between the different interests relating to prices could legally be entered into without the sanction of our law administrators. But if the necessity arose, it is thought the approval of the public authorities of this country, if they were fully informed and permitted to express opinions on the subject, might be obtained."

"Conferences, open discussions and reasonable bases for maintaining peace and prosperity in business matters have become popular and desirable all over the world. It is not too optimistic to assert that a platform of peace and prosperity could and will be adopted, and if so would be adhered to."

The Queen Has a Message

THE center of interest at the banquet, which was held in the evening in the Grand Ball Room of the hotel, was the royal guest of honor. The floor of the hall was crowded with tables, at which sat 1516 members and guests. The balcony, which extends around the entire room, was filled with ladies—the wives, daughters and other feminine guests of institute members. Since the queen, with her entourage, did not enter the hall until the conclusion of the dinner, the atmosphere was charged with more than the usual amount of expectancy. Her arrival, therefore, lent a dramatic touch to the scene. Her reception on the part of the assembled audience was cordial and prolonged, but lacked the spontaneity and warmth which was later to be hers when she delivered her address.

It is perhaps not far from the mark to say that the first reaction of those present was one of curiosity—a desire to see an international figure in person, accentuated in this case, no doubt, because she represented an old world institution, royalty. There was somewhat more than the usual amount of ceremony and formality in the banquet arrangements and program. This was commonly accepted as reflecting a spirit of hospitality rather than obsequiousness, as an expression of esteem

for the crowned emissary of a foreign nation rather than as a compromising of republican ideals.

If there was any feeling of stiffness or embarrassment on the part of either guest or audience, it was quickly dissipated when the queen arose to speak. Talking extemporaneously in excellent English, her native tongue, she promptly put everyone at ease. Her language was simple, unaffected, direct and to the point. Coming from a country where the divine right of kings is entrenched in age-long traditions, she showed remarkable adaptability in sizing up an audience schooled in democratic principles. Under the influence of the magnetism of her personality, those present soon became unconscious of the glamor surrounding her royal position and became interested in her as a woman, as a leader and as a student of world problems.

Speaking of her country, she called attention to its strategic importance in relation to Russia. She said:

"I cannot help feeling that what I can do for my country is to make you feel that we exist, to feel that

quarrel. Therefore I think today we all must forget there ever was a war.

Schwab Speaks

THE queen was given an ovation at the conclusion of her address. A spontaneous demand then arose for a speech from Charles M. Schwab, who was a banquet attendant for the first time in several meetings. It became so insistent that Mr. Schwab arose amid the acclaim of the assemblage, which obviated the necessity for the formality of an introduction. A born public speaker, he was in unusually fine form. If there were any present who were overawed by the distinguished guest, he was not among them. With conspicuous courtesy and gallantry, but without at any time prejudicing the dignity of his American citizenship, he gracefully extended his compliments to the queen, adroitly weaving his witticisms around her personality, much to her amusement and that of the entire audience. With characteristic skill in spreading the gospel of good

Business Outlook Is Favorable—Gary

"ON basis of the volume of business now being secured by the United States Steel Corporation, the industry as a whole at the present time is entering new orders for approximately 80 per cent of its normal capacity. This, when all things are considered, should be viewed as quite satisfactory. If the industry could be guaranteed continuous operations equal to 80 per cent of capacity, it would result in fairly economical costs and reasonably profitable returns.

"There appear to be no clouds on the business horizon which indicate the demand for steel products in the aggregate will be substantially reduced in the near future, although necessarily in a matter of this kind the perspective must be limited as to period of time.

"While the earnings results for the quarter ending Sept. 30 have not yet been fully made up, we believe they will for the industry as a whole be fully as good as they were for the preceding quarter, which were quite satisfactory.

"The crop reports as we have them indicate the production this year will be nearly as large as in 1925, which was a bountiful year. Of course, in some particular products or in some sections of the country this may not be the case. But viewed in the aggregate and for the entire country, it is believed it will. And it is the general total of all which in the end influences comparative business conditions.

"Money is plentiful, the amount in circulation being about \$43 per capita and ample to care for all business. Collections are satisfactory, indicating the soundness of the credit situation. There is sufficient labor to meet all demands and, we think, labor should be and is entirely satisfied both with rates of pay and conditions of employment.

"We sometimes think unfavorable statements published concerning the trend of business are either pure surmises or put out for ulterior purposes, political or otherwise. One thing we know positively, namely, that the administration at Washington is reason-

able and fair toward all business and all interests; and we have reason to believe that the majority in Congress will support the policies and good work the President has inaugurated from time to time and performed to the satisfaction of the people generally.

"So far as the question of import tariffs is concerned, we believe no legislation will be attempted, and certainly none passed, which will be really harmful to the business of the country. While there will be continued competition in the steel industry by foreign producers, we think from the statements they make there is no reason to feel they will seriously interfere with production in the United States.

"On the whole there appears to be plenty of business in hand and prospective, and sufficient funds and credit to do it with, to maintain the very favorable volume of production at reasonable profit which has prevailed for the past year. Therefore, we have faith in the future."

you like that we should exist, . . . that my country is a factor for peace, and perhaps ever so much more than you imagine, or even—I will not say that you imagine, but that you generally think of. Because you think of our position on the map you will understand why Rumania is an exceedingly important country for Europe in general, let alone all the possibilities that lie on our ground and under our ground. Rumania is the last bulwark of civilization toward a country which is now in a state of horror."

Emphasizes Need for World Amity

Addressing herself to the subject of world relations, she emphasized the necessity for forgetting war-born hatreds and cooperating with friend and former foe alike in the work of reconstruction. At one point the speaker added a personal touch which made her plea unusually effective. Pointing to the middle of the hall, she said:

"Here in this room sitting opposite me is a little nephew of mine. He is the son of my sister, who is in Germany, so that he is my German nephew (Prince Hohenlohe-Langenbourg), and beside him is a very interesting man from Germany, Mr. Thyssen, who has come over to talk with you, and we are all friends. We were enemies once, but our quarrel was not of the kind that need remain in the world, nor was it a personal

humor and good will, he brought the banquet program to a fitting close.

Calls New South Child of Electric Age

Another speaker whose remarks sparkled with wit was Hugh Morrow, president Sloss-Sheffield Steel & Iron Co., Birmingham. The serious side of his address dealt with the "Rehabilitation of the South." At one time, he said, the South led the country as an industrial section. Virginia mined the first coal in this country, and George Washington mined ore, which he took to a neighboring furnace. Alabama's first blast furnace was built in 1818, one year before it was admitted to statehood. With the invention of the cotton gin the South was diverted from industrial development to agriculture. By the decade ended with 1860, however, there was a revival of manufacturing activity of a diversified character. At that time the per capita wealth of the South (omitting the slaves) was nearly twice that of New England.

During the four years of the Civil War and the 10 years following it the South was economically and politically prostrated. In 1860 Alabama's public debt was \$5,000,000; in 1870 it had mounted to \$30,000,000. The South's recovery has been rapid, particularly in recent years. Its wealth is now four times what it was in 1900. Its expenditures for good roads are one-third

of the total for the entire nation. Its agriculture has become diversified, and its manufactures now exceed those of New England. In 1923 the South spent \$365,000,000 on education, or three and one-half times the expenditure in 1914. Described as an agrico-industrial section, the South has a unique economic position. Whereas formerly most of the foundry iron produced in the South was shipped to other sections, today 85 per cent of its output is melted in Southern foundries. Because of its unusual resources in water power and its steady development along industrial lines, the new South is referred to as the child of the electric age.

Digressing from his subject, Mr. Morrow paid a tribute to the presiding officer. He said: "The dominant note of the American Iron and Steel Institute is character and service, as personified by Judge Gary,

your president. His policy is building not only for today but for the future."

The subject of lawlessness and crime was discussed by Judge Marcus Kavanaugh, Chicago. At intervals during the banquet program Madame Alda, prima donna of the Metropolitan Opera Co., New York, sang.

A feature of the convention program, which aroused as much interest as the remarks dealing with international relations, was Judge Gary's usual message on the state of business. This is published separately elsewhere.

The technical sessions, which took place during the morning and afternoon, brought out new and valuable additions to the accumulated practical and theoretical knowledge of the industry.

Abstracts of papers follow:

High-Manganese Pig Iron and Manganiferous Ores in Open-Hearth Practice

BY A. W. SMITH

THE use of manganiferous ores and pig iron in open-hearth practice is a question which has been the subject of considerable discussion in recent years. Many reasons have been advanced against the use of manganiferous pig iron in open-hearth practice, the most important of which are the following:

1.—The disadvantages in the blast furnace operation.

2.—The metallic loss in the open-hearth practice.

3.—The increased corroding action on open-hearth basic refractories and ladle refractories.

Some of the advantages obtained are the following:

1.—Elimination of sulphur.

2.—Purifying action in the bath, which tends to produce a better quality steel.

3.—Saving of ferromanganese.

4.—Decreased lime charge and the saving of fluorspar.

5.—Increased tonnage.

It is our opinion that the advantages of the use of manganiferous pig iron are greater than the disadvantages. The disadvantages are gradually being eliminated, or are proved not to have existed.

The use of manganiferous ores in blast furnace mixes, which result in an iron with a content of approximately 1.50 to 2 per cent manganese, we believe is of material benefit to blast furnace practice for the following reasons:

1.—The higher manganese tends to increase the rate of driving, which is due to a more fluid iron.

2.—Troubles due to high bottoms are reduced.

3.—Less runner and ladle scrap is produced in the manufacture of high-manganese iron than with low-manganese iron.

4.—As a general rule, higher blast temperature can be used if the manganese of the pig is not carried too high. Lower coke consumption is obtained than in the production of lower manganese pig iron.

5.—With better furnace operations, less flue dust is produced.

6.—Owing to the affinity of manganese for sulphur, the use of high-manganese iron will enable the open-hearth to produce steel of lower sulphur content.

Some of the disadvantages in the use of manganiferous ores in the blast furnace practice are:

1.—The irregular manganese content in the ore over a period of one ore season, which as a rule results in an irregular content of manganese in the pig iron produced, inasmuch as ordinary iron ores are not classified on a manganese basis.

2.—If pig iron is produced with excessive manganese content, the furnace bottom is liable to become low and frequent break-outs may occur, due to the extremely bad cutting action on the brick-work of the furnace.

A study of a number of tests would indicate that there is no decrease of yield of ingots produced while using manganiferous pig iron. Within certain ranges and similar conditions, the iron oxide plus the manganese oxide content of the slag is more or less of a constant.

The open-hearth slag formed when using high-manganese iron appears to have a greater corrosive action on the basic refractories and ladle refractories than when using the low-manganese iron. It is possible to minimize this action by the proper manipulation of the slag while using high-manganese pig iron.

The use of manganiferous pig iron enables the open-hearth to produce ingots of a lower sulphur content. Given the same scrap charge, if high-manganese pig iron be substituted for low-manganese pig iron, the same sulphur content of finished ingot can be obtained with a 12 per cent limestone reduction.

A study of over 1000 heats of open-hearth rimmed steel made to meet the deep drawing requirement, the study being made on the quality basis which covers freedom from surface defects, and ability of the steel to meet the physical and chemical requirements, clearly indicates that open-hearth steel of this character, made with iron of 1.50 to 2 per cent manganese content, gives the best results for steel of this nature. This study also indicated that steel made from iron which carries more than 2 per cent manganese, especially when the manganese is around 2.5 per cent, is not as satisfactory as when steel is made from iron carrying 1.50 to 2 per cent manganese. We have not as yet determined the reason for this.

The residual manganese in the bath seems to bear a definite relation to the manganese in the pig iron. In the manufacture of open-hearth steels using a 45 per cent iron charge, the residual manganese in the bath, when using pig iron of 1 per cent manganese and under in the charge, averaged 0.16 per cent; while the residual manganese in the bath, when using a pig iron containing 1.50 to 2 per cent manganese, was 0.23 per cent. This residual manganese results in a saving of from 16 to 20 per cent of ferromanganese.

The consumption of fluorspar was 12 per cent less on heats made with 1.50 to 2 per cent manganese iron than those made from iron of 1 per cent and under. An increase of 3.50 to 5 per cent in tonnage was obtained when using 1.50 to 2 per cent manganese pig iron.

[The author then discusses the use of a 4 per cent manganiferous fine ore as a charged ore, a manganiferous lump ore as a working ore and an 18 per cent manganiferous ore as a working ore in open-hearth charges. Tables are given showing composition of ores, pig iron used and steels produced.]

Recently some tests have been made using a 48 per cent manganiferous ore as a charged ore. Several heats charged with 42 per cent pig iron, 58 per cent scrap, 25,000 lb. of limestone, 2000 lb. of 48 per cent manganiferous ore and tapped with a carbon of about 0.30 per cent have shown an increase of 30 to 40 per cent of residual manganese compared to heats in which manganese ore has not been worked. The heats worked well and all indications pointed to a good quality steel.

In our opinion many tests must be made before the

real advantages and disadvantages of uses of manganese ores in open-hearth practice are known. We feel that exhaustive studies of slag analysis, slag conditions and slag formations must be made before any definite conclusions are drawn. As a result of our recent tests, we have decided to do more work along these lines and in doing so we hope to show that manganese ores can be used economically and beneficially in the open-hearth practice.

Discussion

Two written discussions of Mr. Smith's paper were read; one by P. G. Wilander, superintendent of blast furnaces, Wheeling Steel Corporation, Wheeling, W. Va., and the other by M. J. DeVaney, South Works, Illinois Steel Co., South Chicago.

Mr. Wilander said that the use of manganese ores has increased greatly during the last few years because this practice is helpful in making a better product. The practice at his plant has demonstrated that, in using high manganese pig iron, a material saving of ferromanganese is immediately noted in the open-hearth department, a saving which is proportional to the manganese content in the iron. Its use also has this advantage that it tends to produce a homogeneous manganese-bearing bath of steel, whereas by adding ferromanganese the tendency is toward some segregation. At his plant it has been the custom to produce iron containing 1.50 to 2 per cent manganese and in some cases from 2 to 2.25 per cent manganese, depending on how much sulphur there is in the blast furnace burden and how pure the steel produced must be.

In his opinion, high manganese loss in slag is not always a criterion of poor practice, as slag volume must be reckoned with. The percentage of oxide of

manganese in the slag depends on such factors as hearth temperature, rate of base to silica and rate of driving. Due to manganese ore charged in the blast furnace burden so as to produce 2 per cent manganese in the iron, a blast furnace can be operated on a more acid slag and still make a low sulphur iron because manganese acting as a base combines with silica, allowing lime to combine with sulphur. It is a metallurgical law that a metal will dissolve compounds of itself but not compounds of another metal with as much ease, therefore sulphide of manganese separates out and rises to the surface. High manganese iron will retain its fluidity much longer in ladles and mixers on account of high initial heat, thus helping to keep down scrap production.

Mr. DeVaney emphasized the importance of Mr. Smith's paper in demonstrating the value of manganese in open-hearth practice. The results given in his paper duplicate those at his plant, the experience extending over a number of years. Mr. DeVaney in his discussion presented data covering operations of blast furnaces, open-hearth furnaces and rolling mills over a period of eight years. According to his understanding, high manganese pig iron represents iron containing 1.75 to 2 per cent manganese and low manganese pig iron is iron containing 1 per cent manganese. The benefits realized from the use of manganese-bearing irons in open-hearth practice are: 1—Manganese is a powerful deoxidizer. 2—A more fluid slag results. 3—The sulphur is lowered in the steel by 12 to 15 per cent. 4—The residual manganese in the bath runs as high as 0.23 to 0.25 per cent from the use of high-manganese iron and from 0.12 to 0.15 per cent from the use of low-manganese iron. 5—The saving of ferromanganese amounts to 2 lb. per ton of ingots.

Welding of Iron and Steel

BY COMFORT A. ADAMS

NONE of the methods of fusion welding described below (excepting forge welding) is more than two generations old, and practically all of the significant applications have been made within the last generation, most of them within the past decade. These newer methods have ceased to be a tool for repair work alone, however valuable they may be in that field, and now constitute one of the greatest modern labor-saving devices employed in regular production. Few of those not in actual contact with these applications realize either their magnitude and importance or the rate at which they are increasing.

The author's object in writing this paper is to present a brief description of the several processes of welding, their advantages, limitations and fields of usefulness, with particular reference to the welding of iron and steel. Except where otherwise specified, mild steel will be assumed. No attempt will be made to

discuss the deeper metallurgical phases of the problem as the writer is not a metallurgist.

[The author's paper, which covers 71 printed pages, is a thorough discussion in outline of nearly every phase of this important art. It is divided into two principal parts: Description and discussion of methods, with the second part dealing with the applications of welding.]

In describing the various methods, Mr. Adams takes up each one separately, covering the processes and some of their applications. His treatment is also somewhat historical. Some of the various kinds of welding discussed are forged welding, electric resistance welding, butt welding, seam welding, spot welding, the latter being gone into quite thoroughly. In discussing tube welding, the author states that several hundred thousand feet of steel tubing are made every day by the resistance welding of the edges of strip steel rolled



MR. SMITH was educated in the grade and high schools at Pueblo, Colo., and at the Colorado School of Mines, Golden, Colo. He was graduated from the latter institution in 1914 as a mining engineer. He had some experience as a chemist with the Colorado Fuel & Iron Co. He started with the Youngstown Sheet & Tube Co. in 1914 as a metallurgical inspector. Since then he has occupied successively positions as assistant foreman of the rolling mills, assistant superintendent of the open-hearth, and assistant superintendent of the blast furnace and steel department. At present he is works superintendent of the Campbell, Struthers and Hubbard plants.

MR. ADAMS, who has been Lawrence professor of engineering at Harvard University since 1911, is a director of the American Bureau of Welding, New York. During the war he was appointed by the President as a member of the general engineering committee of the Council of National Defense of which he was later made chairman. During the war he was active in the application of welding to shipbuilding. He was also largely responsible for the organization of the American Engineering Standards Committee. He is credited with numerous inventions in the engineering field and has been active in consulting work. He is a member of several of the leading foreign and American engineering societies.



up to form a tube. A single machine will take the flat surface and shape and weld it at a rate of from 60 to 150 ft. per min. Several divisions of the electric arc welding method are discussed, including the use of coated electrodes. The quality both of arc welds and resistance welds are treated in the paper.

The subject of oxyacetylene welding, this portion of the paper being prepared by S. W. Miller, of the American Welding Society, is thoroughly gone into with several examples of applications of the method. The portion of the paper devoted to thermit welding is written by J. H. Deppeler.

Several pages are devoted to welding engineering and this subject is discussed under the following heads: Design, material, apparatus, welding operators, technique of welding, inspection and testing.

In the second part of the paper, devoted to applications of welding, the author gives a summary in several important fields, such as shipbuilding, pipes, tanks and pressure vessels, structural steel, the automobile industry, railroads and rail joints. Each one of these is taken up in order and their advantages as well as some of the more recent products of the application of welding in those fields are discussed and fully illustrated.

Considerable space is devoted to welding in the structural field. The application in this field is as yet of negligible magnitude, says the author, the few applications and tests already made indicating that it has enormous possibilities. Some of the applications in this field from the earliest time to the present are discussed and individual installations are quite fully gone into. The application in foreign countries is also touched upon. The author states that the American Bridge Co. will shortly erect a five-story frame building for the Westinghouse Electric & Mfg. Co. involving about 700 tons of steel in which electric welding will be used exclusively in the fabrication and erecting operation.

After giving an outline of the proposed investigation which will shortly be undertaken by the American Bureau of Welding with the cooperation of the American Institute of Steel Construction, the investigation being conducted to secure fundamental information needed by designers and contractors in connection with the use of welding in large steel structures, the author devotes a few paragraphs to a discussion of welding versus riveting in steel structures, which follow:]

It may be of interest at this point to make a brief statement of the advantages and disadvantages of welding for steel structures as far as it is possible from present knowledge.

1. A saving of steel by the elimination of many overlaps, brackets and angle connections, and possibly by the reduction of sections.
2. In some cases, such as that of lateral wind bracing, this elimination simplifies the architectural treatment of exterior and interior finish.
3. The elimination of the noise of riveting.
4. The elimination of layout and punching of rivet holes, as well as of the rivets themselves.

On the other hand, the large scale use of welding will doubtless develop difficulties and disadvantages not now foreseen, although many of these have already been met and overcome.

One of these difficulties relates to tolerances as to length, camber, etc.

For example, beams are now ordered $\frac{1}{8}$ in. "short" with a plus or minus tolerance of $\frac{1}{8}$ in. In a welded structure, these large tolerances would be objectionable, as they would require either an excessive amount of weld metal to fill up the joints, or the use of brackets and angle connecting pieces, the elimination of which constitutes one of the savings of the welding process.

The exact widths of web plates and the absence of considerable camber are not always of importance in riveted girders but are of considerable importance in the case of welding.

Conclusions

The establishment of welding as a dependable industrial tool has opened up a new era as to economies and other gains which may be effected in fabrication. Experience has shown what are the most important factors that enter into the making of successful welds. Among these are skilled workmanship, supervision, inspection, proper welding wire and base material, design, proper technique, and suitable apparatus. With each of these under intelligent control, a uniform and dependable product will be assured.

Discussion

In discussing Professor Adams' paper, J. D. Wright, General Electric Co., Schenectady, N. Y., said, in part:

Electric welding has already become a manufacturing process of great importance, and its use by the industries is being rapidly extended. The development of automatic welding has been one of the important factors contributing to this increase. Automatic welding is most applicable to quantity production work where the seam is either straight or circular in form.

The use of electric welded plates instead of iron or steel castings in the construction of oil circuit breakers, transformers, and generator and motor frames has resulted in a material decrease in the cost of manufacture. From several years of experience in making oil tight joints and seams such as are required on transformer work we have found that arc welding is about 15 per cent cheaper than riveting.

In a paper on Modern Steam Power Stations by C. W. E. Clarke and D. L. Galusha, presented at the May meeting of this institute, mention was made of water-cooled walls for pulverized fuel furnaces. The side wall construction consisted of water tubes to which flat longitudinal fins are welded, the fins completely filling the gap between the tubes and forming with the tubes a complete metal wall. The welding of the fins to the tubes is interesting because of the length of the weld and the fact that two automatic welders are working simultaneously on the same machine. The fins, which are about 2 in. wide and $\frac{3}{16}$ in. in thickness, are welded to diametrically opposite sides of the 4-in.

tubes, which vary in length up to 30 ft. Four welds are necessary to complete the job, it requiring two to hold each fin in place. The welding is done at a rate of about 1 ft. per min., and two arcs are used so that one seam on each fin is welded in one passage of the travel carriage. The machine on which the work is done consists of a bed about 30 ft. long, grooved so that the tube to be welded fits in tightly at about half its diameter. The fins are then laid in position along the sides of the tube, and the whole locked in place by an ingenious set of clamps controlled by compressed air. These clamps are so placed that the fin is pressed tightly against the sides of the tube at the point to be welded, and also prevented from moving vertically. The two welding heads are mounted on the same carriage, which carries them the length of the tube, depositing metal at the same rate on both sides of the tube. When the end is reached, the carriage stops, the clamps are released by a single movement of the control lever, the tube is turned over and again clamped, and the two other seams welded on the return trip of the carriage.

One of the principal reasons for the success of the automatic welder in this particular case is the rapid and even deposition of metal on both sides of the tube simultaneously. With hand welding, for example, it would be practically impossible to synchronize the rate of travel and the amount of metal deposited by two operators working on both sides of the tube at once, and even if it were, the cost would be prohibitive. If a welder were working alone, by the time he had welded the fin on one side, the contractive effect of the cooling weld would warp the tube so badly that it would be impossible to weld the other fin into place. With the automatic welder working on both sides of the tube at the same time, the contractive effect is completely neutralized, and the tube remains straight.

One of the most interesting of recent developments is that process which has been called atomic hydrogen arc welding. One of the great features of the atomic process is the prevention of oxidization of the weld which as a result is extremely ductile and strong. Approximately 30 to 40 cu. ft. per hour of hydrogen at

2 to 3 lb. gage pressure are consumed by the average size torch used in our laboratory. Most of the experimental welding work has been on alloy steels, such as chromium steel, containing up to 35 per cent chromium, nickel steel up to 85 per cent nickel content, molybdenum steel up to 20 per cent molybdenum content, manganese steel up to 12½ per cent manganese content and many others. The results attained indicate that welds can be made by the atomic process which cannot be made by any other known means. It is not expected that this process, when placed on the market, will supersede the present method of arc welding, but it should greatly broaden the field of electric welding applications.

A. M. Candy, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., described the series of tests of welded specimens conducted by his company and the test buildings it has erected to demonstrate the possibilities of the electric arc welding process of joining structural steel members. The first building constructed is a small one, 40 x 60 ft. and 50 ft. high. It cost \$3,000, whereas it is estimated that if it had been riveted the cost would have been \$5,000. A second building, 70 x 220 ft., and 80 ft. high, with five stories and a mezzanine floor, is being erected at the company's Sharon Works. Its cost is expected to total \$250,000. A test of the building will be made in December when one floor will be subjected to twice its estimated load in service. The designs used in the test specimens and in the buildings were based on the use of welding and in almost every case the joints provided could not have been riveted.

James H. Critchett, Linde Air Products Co., New York, emphasized the necessity for the application of engineering principles in welding. He mentioned a railroad repair shop in which the welders are relieved of all responsibility for the design of a given weld and the kind of welding to be employed. In this shop also welders are given periodical tests. In speaking of oxy-acetylene welding, he said that the atmosphere created by the torch permits the welding of many materials, such as brass and alloy steel, which are not now weldable by other commercial processes.

Action of Sulphur in Basic Open-Hearth Practice

BY A. N. DIEHL

THIS paper† is presented with the desire that it be considered in connection with one read by the author before the institute in May, 1926, and will be confined principally to the action of sulphur in basic open-hearth steel practice. As mentioned in the previous paper, the object of this experimentation and research on the part of the company was to develop a more complete knowledge of reactions and element balances, as an assistance to the further study of the metallurgy of steel making, especially directed to the elimination of objectionable metalloids. The tests were made for the most part at the Duquesne Works of the Carnegie Steel Co., but, in addition, data from other plants of the same company have been included. Some repetition of data given in the previous paper is necessary, but this has been unavoidable in order to clearly outline the practice under discussion.

In order to show the effect of the different elementary factors and materials as they are involved and their relation to sulphur characteristics, each is taken up separately. It is the aim to give not only the data pertaining to practice, but such allied tests and deductions which may be of interest to the industry.

The principal elements comprising an open-hearth charge are pig iron, scrap, ore, limestone, dolomite, fuel, slag and refractories.

[The author, in the paper of 37 printed pages, discusses in detail the influence of these various parts of

the charge. The influence of the pig iron and scrap is first taken up, followed by a consideration of the effect of fuel on the sulphur content, different kinds of fuel being considered, particularly bituminous coal. Limestone is next taken up, attention being given to its sulphur content and the percentage of sulphur entering the steel. Mr. Diehl then discusses the influence of iron ore and refractories. An important section of the paper is that devoted to the influence of manganese, gases and temperature, particularly the effect of residual manganese on the sulphur content of the steel. Of prime importance is the discussion of the effect of the slag. In this, tables are given of the distribution of sulphur between the slag and the metal as well as of the sulphur distribution in the ladle. The paper is well illustrated with graphs and with tables of analyses.]

Summary and Conclusions

It may be well to summarize the more important features outlined, and draw such conclusions as they may indicate.

The most assured method of producing low sulphur basic open-hearth steel, is to use materials containing a minimum quantity of that element.

Pig iron and scrap should be kept as low in sulphur as possible. This is subject of course to the other materials entering into the operation, as well as the specifications which have to be met.

Gas free from sulphur is preferable, but in the use of by-product or producer gas it should be extremely important that the gas be burned

†Supplements a paper presented May 21, 1926, under the title of "Data Relating to Basic Open-Hearth Steel Practice," [THE IRON AGE, May 27.] The detailed data presented in the previous paper should be considered in connection with the present study of the action of sulphur.

MR. DIEHL was graduated from the Pennsylvania State College in 1898, and entered the employ of the Carnegie Steel Co. in 1899 as a chemist at the Duquesne works. He was transferred to the blast furnace department after seven months and was made assistant blast furnace superintendent at the same plant six months later. In October, 1901, he was made superintendent of that department, in which capacity he served until October, 1915, when he assumed the position of assistant general superintendent of the Duquesne works and of the blast furnaces. He was appointed assistant to the operating vice-president a year and one-half later, with headquarters at the general offices in Pittsburgh. His appointment as operating vice-president, which position he still holds, was made in 1925.



so as to oxidize the hydrogen sulphide before coming in contact with the metal or scrap.

Slag conditions are of primary importance, especially where higher sulphur materials are used, and every care should be taken in operation to obtain correct analyses and weights of material entering the charge, also the ore and flux should be carefully calculated, wherever possible. The slag should be oxidizing and basic, as with an acid or non-oxidizing slag calcium sulphate may be reduced, and sulphur revert to the metal bath. The slag should be sufficiently fluid to effect a proper interchange between the metallic and non-metallic baths, to enable the reactions to take place freely. In operations requiring a run-off slag, this material should be removed to the greatest extent possible so that the final slag may be utilized to the best advantage.

Care should be taken to prevent resulfurization due to a change of slag composition from contamination with loam, sand, or any other foreign material in the runners or ladles.

The tests given are for conditions of operation as described. As all localities naturally have different materials and specifications to deal with, each must solve its own particular problem. The data given aim principally to outline the action of sulphur under the conditions prevailing at the time of the tests, as well as to point out fundamental reactions which are universal irrespective of location.

It is the desire of those who assisted in the collection and compilation of these data, that the information may serve to stimulate further efforts on the part of the industry to simplify basic open-hearth operations, and also to encourage in others a further and increas-

ing zeal in the field of research to produce an even better quality of product with the materials available.

Discussion

This paper was discussed in writing by W. A. Maxwell, Inland Steel Co., Indiana Harbor, Ind., and by F. S. Slocum, Jones & Laughlin Steel Co., Pittsburgh. Both discussions were presented by the authors.

Mr. Maxwell said that the one great value of Mr. Diehl's paper was that the data in it are based upon actual practice. He thought, however, that a further study of the effect of sulphur in blooming and rolling mill practice would be of considerable benefit. Mr. Diehl's conclusion, that an increase of sulphur in the pig iron means an increase of sulphur in the steel, was borne out by his own experience and also that the amount of silicon in the pig iron has a marked influence on the quantity of sulphur in the steel. The author's conclusions as to the amount of sulphur due to fuels are correct and have been proved by experience at the Inland Steel Co. Mr. Maxwell in his written discussion includes tables which illustrate these facts. He said that he agreed in all the conclusions of the author, adding that in his opinion the use of lime is a distinct benefit in the elimination of sulphur.

Mr. Slocum testified that, where coal is used as fuel, the screening of it is of decided benefit toward the lowering of sulphur. He also stated that pig iron of high manganese content should be used to eliminate sulphur as well as to reduce oxidation and also his experience had demonstrated that the deep bath in a tilting furnace will remove sulphur faster than a shallow bath in a stationary furnace. He felt that it was expedient for all to cooperate in lowering sulphur for the benefit of consumers.

Plate Mills—Recent Developments and Tendencies

BY F. M. GILLIES

INDICATIONS are that the production of sheared and universal plate will be in excess of 4,300,000 tons in the current year, which will be the heaviest production ever turned out. Since the war 24,096,231 tons of sheared and universal plate have been produced as against 20,205,211 tons of shapes, 18,337,547 tons of wire rods and 17,283,658 tons of rails; this, too, in a period when plates have been generally supposed not to be in great demand. Since the war the consuming trade, according to average annual price lists, has spent over a billion and a quarter dollars for plates. This indicates that the plate trade is of no small dimensions and that it is deserving of much thought in method and means of producing better quality at lower cost. This idea of better quality at less cost in a business spending an average of \$178,000,000 annually has developed improvements and will continue to develop them as long as there is need for them.

The advance in roll turning, brought about by the introduction of the plate roll grinder, has been a greater benefit to the rolling than anything recently developed in this end of the manufacture. The grinding machine does extremely accurate work and does it quickly, and entirely eliminates the necessity to depend on roll turners, who vary greatly in ability. Mill conditions are made more standard because of this mechanical method, for the grinding machine will produce the same result on each roll, while irregularities are often produced on the surface of rolls turned in a lathe. These irregularities make the mills very difficult to operate. Accurately tapered rolls, always a difficult thing to produce in a lathe, can be produced in a grinder with ease on a very flexible basis. The grinder has the advantage of being able to taper a roll in a short period of an hour or two to meet a special condition of wear.

One well-known manufacturer has installed a ma-

chine for the laying out of plates. This may be the start of development along this line, but it still is quite inflexible and too slow for mills producing plates at a high rate per hour. The idea is substantial and it would be natural to deduce that good results would evolve.

The most recent promising appearing shearing development is the Ennis table, invented by L. Ennis, of Dorman Long & Co., in England. His patent is a table which appears much like a section of the ordinary roller table, but mounted on wheels and operated on rails. The plate, after being end sheared, is delivered on to this table and transferred to the side shears by means of a double series of live rolls divided in the middle, capable of independent operation. Hence they may be operated in unison and in the same direction of rotation, or those on one side of the table may be rotated at a slower speed than those on the opposite side or even in the reverse direction, so as to secure a drag or slewing action to the plate, and in this way permit the operator to bring the plate on the table into position for shearing. In addition to the rollers there is a series of electromagnets, capable of being traversed across the table so as to hold the plate at any desired point. The faces of the magnets are just below the level of the top of the rolls, and each magnet can be made free to revolve in its own bearings and be caused to act independently of the other magnets.

Of the 24,096,231 tons of plate produced since the war, 7,562,788 tons have been rolled on universal mills. This, in comparison with the country's universal plate-producing capacity, shows the universal mills to have been more steadily employed than the sheared units. Probably the most outstanding improvements are the provision for more rapid changes of vertical and horizontal rolls. Vertical roll changes have always meant considerable delay, and now, by new types of couplings and new housing design, have been improved.

Today in the plate business we find what can be justifiably called an economic paradox. With the demand for plates greater than at any time in the history of this country, we find the price of this commodity lower than at any time in the last 10 years with the exception of 1922, which felt the aftermath of the 1921 deflation when the plate production was only 24 per cent of the country's capacity. It is generally conceded that demand regulates price, but here with greater demand prices have dropped off. This goes to show that, despite the great market for this

commodity, competition has dealt decisive blows which have produced a desirable situation only for the consuming trade.

In the future the fabricators, tank builders, car shops and all other consumers are not going to expend money to put plates into condition for their uses, but will specify the perfect plate, accurate to dimensions, without gage variations, and delivered to them so that they can be handled through their processes with the minimum of expense. This condition comes as a matter of self-preservation.

The tendency of the automotive trade, as well as other industries which have drawing and pressing operations in their process, is to require a minimum of gage variation from side to center of the individual plate. This will require changes in the design of mills. Variation from side to center of the individual plate is caused by wearing of the rolls and bending of the rolls, the latter generally known as mill spring. Design cannot alter roll wear, but it can stop roll spring. This can be done by using rolls larger in diameter, which is generally considered not desirable from a rolling standpoint, or by supporting or backing up the rolls, which come in contact with the hot steel, by rolls larger in diameter and usually made of steel. This prevents the chill rolls from bending, just as the main rolls of a three-high mill prevent the middle roll from bending. This principle has already been used successfully, and the tendency now is toward an increasing popularity. Although we have not as yet heard of a five-high plate mill, it certainly is not beyond speculation. Present ideas along these lines appear in the way of a tandem layout with the four-high finishing of chilled iron rolls backed up by steel. The process used will be standard tandem practice of roughing the slab down to a thickness where three or more passes in the finishing stand will be sufficient to take the thicker center out of the plate and produce a perfect surface.

Shearing tendencies are incorporating closer tolerances. More particular edges, accurate dimensions, and no shear bows, all these will call for colder shearing, and perhaps resquaring, and extensions to cooling beds to prevent the necessity of rehandling.

The tendency is plainly to meet the exact demands of the customer. The production of plate will probably not become less competitive, and by this reasoning the sooner the plate manufacturers accept this to be the situation, the sooner will improvements be made and economies result.

Low-Phosphorus Pig Iron in the Birmingham District

BY E. K. MILLER

THE Birmingham district has no ores available in commercial quantities for the manufacture of low-phosphorus pig iron. The steel plants of the Birmingham district found it necessary to purchase low-phos-

phorus pig iron from the North for the manufacture of ingot molds and special castings.

So far as known the first low-phosphorus iron produced was in 1903 by the Tennessee Coal, Iron & Rail-

MR. GILLIES was educated at Cornell University, which institution he left at the end of the third year to go into military service in 1917. From 1917 to the close of the war he served as an aviation pilot in the United States Navy, both here and in the war area. He entered the employ of the Illinois Steel Co., South Chicago, as a foreman of various rolling mills and left that company in 1922 to assume his present position as superintendent of the plate mill of the Inland Steel Co.





MR. MILLER was educated at Lafayette College and Yale University where he studied mixing and metallurgical engineering. His early career includes experience in the blast furnace departments of the Duquesne steel works of the Carnegie Steel Co. and the Ensley blast furnaces of the Tennessee Coal, Iron & Railroad Co. in 1912 and 1913 after being graduated from the Sheffield Scientific School at Yale. From August, 1917, to February, 1923, he served at different times as assistant superintendent at the Oxmoor, Bessemer and Alice furnaces. In February, 1923, he became assistant superintendent of foundry blast furnaces of the company and in April, 1924, was appointed superintendent of foundry blast furnaces, having supervision over the four Bessemer, the Alice and the Oxmoor furnaces, which position he now holds.

road Co. A cargo of low-phosphorus ore was imported from Cuba for pig iron to be used in the manufacture of ingot molds. This iron ore contained 0.023 per cent phosphorus, giving a resultant phosphorus content in the pig iron of 0.12 per cent, but the ore was high in sulphur, giving sulphur content in the iron of approximately 0.150 per cent, which was undesirable for the manufacture of ingot molds.

As the steel production increased, the requirements of low-phosphorus pig iron also increased to such an extent that the Tennessee Coal, Iron & Railroad Co. began experimenting in the early part of 1914 in melting steel scrap and high-phosphorus pig iron in a cupola for the manufacture of ingot molds, the proportion of scrap in the charge varying from 40 to 100 per cent. This was unsuccessful on account of being unable to raise the silicon above 0.80 per cent and control the sulphur in the iron.

A few months later a method was developed for the manufacture of low-phosphorus iron in a blast furnace, using about 80 per cent steel scrap and 20 per cent low-phosphorus brown ore, adding silica rock to increase the slag volume sufficiently to control the sulphur in the pig iron. On account of the scarcity of low-phosphorus brown ore, this burden was changed to an all-steel scrap charge. This is done by charging into an open-top furnace steel scrap, coke, river gravel, dolomite and a small amount of manganese ore. The steel scrap of the charge consists of approximately 70 per cent rail ends, the remainder being bloom crops, broken ingot molds and miscellaneous rod and plate scrap.

The following is a typical furnace charge when operating on this iron:

	Lb.
Steel scrap	15,300
Coke	7,400
River gravel	1,800
Dolomite	4,700
Manganese ore	75

The steel scrap of the furnace charge is below 0.06 per cent in phosphorus. Forty-eight inches is the maximum length of rail ends, bloom crops and miscellaneous scrap that can be used in an open-top furnace. The maximum size of broken ingot molds is 48 in. x 36 in. x 4½ in., which will weigh approximately 2000 lb.

The above method in the manufacture of low-phosphorus pig iron with an all-steel scrap burden, using river gravel to make up a slag volume, was developed exclusively by the Tennessee Coal, Iron & Railroad Co. at its Bessemer blast furnaces. So far as known this method is not used at any other blast furnace plant. A high-grade Bessemer iron is produced which cannot be distinguished from that produced from iron ore.

On a recent campaign, No. 2 Bessemer blast furnace of the Tennessee Coal, Iron & Railroad Co. produced 21,842 tons, which showed an average analysis of:

	Per Cent
Silicon	1.89
Sulphur	0.034
Phosphorus	0.079
Manganese	0.75

The total carbon will average approximately 4.25 per cent.

The size of the furnace on which this low-phosphorus iron is produced is:

Hearth	12 ft. 3 in.
Bosh	17 ft. 9½ in.
Height	74 ft. 6 in.

The average production on this recent campaign shows 397.3 tons per day with a coke consumption of 1045 lb. per ton of iron. The average wind blown is approximately 24,000 cu. ft. per min.

This operation should not be confused with that of the cupola. Besides melting scrap and slag-forming constituents, it returns to the metal the carbon and silicon which were removed in the Bessemer converter and the open-hearth furnace.

During the last six months of 1918, the Tennessee Coal, Iron & Railroad Co. operated their "Little Belle" furnace at Bessemer, producing low-phosphorus pig iron from an all-steel scrap burden. This iron was cast in 70-ton ladles, transferred to the open-hearth department at Ensley steel works, and used for recarburizing.

The average production on this furnace was 242.5 tons per day with an average coke consumption of 1177 lb. per ton of iron. Average analysis of the iron produced on this furnace was:

	Per Cent
Silicon	1.67
Sulphur	0.037
Phosphorus	0.046
Manganese	0.73

The ingot molds and castings made from this iron compare very favorably with those made from regular Bessemer pig iron. The pig iron produced is remelted in the cupola for the manufacture of ingot molds, but it is the opinion that, if the iron were cast in the blast furnace ladles and poured direct into molds, as they are now doing at most plants in manufacturing their ingot molds, the mold practice would be considerably better, on account of being able to get a lower sulphur mold.

This method of charging all-steel scrap in a blast furnace in the production of low-phosphorus iron has proved economical in the Birmingham district, where there are no low-phosphorus ores available, but in a district where low-phosphorus ores are available, it would be more economical to use the ore, taking into consideration the price of scrap required for this operation.

Discussion

The only discussion of Mr. Miller's paper was a written one by R. H. Ledbetter of the same company. He reviewed somewhat more in detail some of the author's statements and enlarged upon the experience of the company in the production of low phosphorus iron by the method described by the author. He said that recent experience showed that this iron can be produced with a coke consumption of from 600 to 700 lb. and with a slag volume of 500 lb. per ton of metal. He also stated that the method is practical and economical in the Birmingham district and that at least 200,000 tons of this grade of iron had been made in that district by this process.



MR. SPELLER is a graduate of the University of Toronto in 1894, receiving the honorary degree of Doctor of Science from that institution in 1923. After several years of general engineering experience, he became connected with the National Tube Co. and is now in charge of its metallurgical research department. His chief work has been in connection with improvements in the manufacture of steel tubing and important new developments for the abatement of corrosion in water systems. He is chairman of the American Society of Refrigerating Engineers' committee on corrosion and was recently appointed chairman of the boiler corrosion committee, sponsored by the American Water Works Association with the cooperation of the American Society for Testing Materials and other organizations.

Corrosion of Structural Steel and Methods of Curbing It

BY F. N. SPELLER

SOON after steel had become generally used as the framework of modern structures, the question of the possible failure of large structural steel buildings by corrosion was raised, and within the past year this has again been the subject of sensational articles in the daily press. Structural steel has been widely used for this purpose for 35 years and more with no serious consequences up to the present, but it is well to consider and determine whether adequate precautions are being taken to prevent impairment in the strength, especially in large modern steel buildings. When the Madison Square Garden building was demolished last year, the structural iron and steel was found to be almost free from corrosion after 35 years' service, except in a portion of the tower where copper sheathing, which was supposed to protect the steel work, had been perforated by corrosion. No particular care was taken to maintain the structural framework, most of which received little or no attention during the life of the building. In spite of lack of attention, however, disastrous failures have not occurred in steel frame buildings after 35 years, and it appears certain that with proper regard to protection of the steel work in design, inspection and maintenance, the life of steel structures may be prolonged almost indefinitely.

Much confusion has resulted through observers failing to recognize that, while the initial reactions are the same, the actual amount and character of corrosion is controlled by external factors. The results, therefore, may be relatively very different in different environment. Based on the characteristic external controlling factors, corrosion of iron may be roughly divided into the following types or classes: (1) Atmospheric, (2) underwater, (3) soil, (4) chemical, (5) electrolysis (due to stray currents).

In considering this factor it is fundamentally important to keep in mind the foregoing distinction between different types of corrosion. Variations in the range of carbon, manganese, phosphorus, sulphur and silicon within the tolerances permitted by standard specifications for open-hearth structural steel have practically no influence on the corrosion rate in water or soil. In atmospheric corrosion, sulphur over 0.60 per cent usually begins to exert an accelerating effect (in the absence of copper). In acid solutions the purity of the metal is important, but comparative experience indicates that in domestic water and in contact with soil, dirt or cinders the composition of steel is of relatively small importance compared with factors external to the metal. Ordinary Bessemer steel is apparently just as durable as open-hearth steel or ingot iron, or, for that matter, puddled iron under these conditions. The impression that wrought iron is generally more durable than steel has not been sustained by comparative tests in service and seems to have originated

from the greater durability in air of wrought iron made from Eastern ores, containing a few tenths of 1 per cent of copper.

It is now well known that wrought iron or steel containing about 0.2 per cent copper is several times more durable than the same metal with less than 0.03 per cent copper, when exposed in the atmosphere. This advantage does not usually hold under water or in corrosive soil.

The slow-rusting steels, such as those containing from 13 to 26 per cent chromium, will last considerably longer but these are not generally available for structural purposes as yet on account of the high cost, except for small and important parts, where expense is a minor consideration.

The main advance in knowledge of corrosion during the past 10 or 15 years has been in a better understanding of the influence of many external factors, the most important of which are referred to above. This has led to the conclusion that differences of potential on the surface of metal more often originate from external causes than from differences in composition or other inherent properties. The recognition of the importance of dissolved oxygen and of self-healing surface films, and the development of slow-rusting ferrous alloys of copper, chromium and nickel, are other outstanding developments of this period.

At present the opinions of engineers differ considerably as to the best protective measures. Good painting is sufficient for permanent protection of members which are otherwise protected from the weather and other corrosive elements or which are accessible for renewal of the coating. A thick coating of molten asphalt or well-refined coal-tar pitch may be applied to the cold metal over a suitable priming coat where waterproofing is required. Concrete undoubtedly gives the best protection when properly applied to the clean metal, but this also has its limitations as noted above.

Valuable data may be obtained by a systematic examination of the steel work during the demolition of old structures. It is suggested that a representative commission of engineers be appointed to examine and report on the condition of the steel work in old buildings, especially when they are being demolished to make way for new structures. This body should have no political affiliations, but might well be sponsored by one of the national engineering societies. The recommendations of such a commission should afford valuable suggestions for improvements in the design and maintenance of steel structures, and should tend to set at rest any apprehension as to their safety.

Discussion

Structural steel will not rust if properly treated according to replies to a questionnaire sent out by

F. W. Skinner, consulting engineer, New York, who discussed Mr. Speller's paper. The questionnaire contained 61 different questions, and several hundred responses were received from prominent users, designers and maintainers of steel structures throughout this country and in Canada. He summarized the answers as follows:

Structural steel has practically unlimited working life. Rust is caused by a limited number of specific conditions. Certain parts of all structures are more susceptible than others to rust.

All structures can be protected from serious rust.

Electrolysis is usually negligible.

Rust can be removed after it has commenced.

Rust will not become dangerous without warning.

Steel is the most reliable of materials.

Referring to a recent advertisement containing the charge that "rust was built into the Eiffel Tower and now threatens its destruction," Mr. Skinner said that a thorough investigation by the American Institute of

Steel Construction through its Paris representatives, and the municipal officials in Paris, shows that the tower always has been and now is exceptionally free from rust and apparently is due for unlimited life so far as corrosion goes. The administrator of the Eiffel Tower Society says: "The iron work is in excellent condition and the paint we are using has proved entirely satisfactory. The whole is in as good condition today as the day it was built."

Mr. Skinner mentioned other notable examples of the absence of corrosion in steel. Some of the New York Central Railroad bridges have been in service for 40 years and show no signs of corrosion, he said. Jacob Volk, New York City house-wrecker, he added, has demolished 200,000 tons of structural steel framework and has never found any dangerously corroded, even though under bad conditions. Ninety per cent of the floor beams removed from such structures are reused.

Discuss Ford Five-Day Week

Manufacturers Say Broad Adoption Would Open Industrial Field to Europe, Increase Cost of Living, and Hinder Worker

VIEWS of manufacturers respecting the five-day-a-week operation at the works of the Ford Motor Co. were recently sought by the National Association of Manufacturers. Briefly summarized, they declare that the five-day week would increase the cost of living, would curtail production, making the United States more vulnerable to European competition, would be against the best interests of the workers who want to advance, would create a craving for excessive luxury and leisure, and would not be applicable to industries in general. From replies, have been taken the following excerpts:

Paul T. Norton, president, Case Crane & Kilbourne Jacobs Co., engineering products, Columbus, Ohio:

The question as to whether the American people can enjoy a shorter period of work each week, without curtailing the present steady improvement in the standard of living, will not be determined by the procedure of any single individual but by the earnest desire of all persons interested in industry to reduce steadily the large number of non-producing members of society who, while successful themselves, are naturally a burden on and a hindrance to the advancement of those workmen whose accomplishments are for the benefit, comfort and welfare of the people as a whole. By eliminating waste efforts it is possible even to advance the standard of living of all the people to a point where occupation furnishes the real pleasure and any form of idleness is considered a calamity.

A. L. Humphrey, president, Westinghouse Air Brake Co., Pittsburgh:

The relationship which happily exists at the present time between American employers and employees does not call for the creation of an extra holiday. If an employee is forced by circumstances of a personal nature, or he wishes for private reasons to take a day off, there is nothing to prevent him from doing so. If he wants to go to a game of baseball or football or take his family to a picnic, he can do so without his employers making the slightest objection.

A. H. Mulliken, president, Pettibone Mulliken Co., guard rails, frogs, switches, manganese, etc., New York and Chicago:

It is plain that it is impossible, as a practical condition, for a man to produce as much work in five days as he does in five and one-half days. It is purely assumption that he can do as much in five days.

There is an economic loss in the five-day work week and, unless all manufacturers adopted a five-day work week, it would create such differences in the cost of production that prices would be affected, and they would be compelled to return to the five and one-half day work week.

The question raised by this action of Henry Ford's is not of moment at this time and will not create any change in industry generally.

Robert P. Lamont, president, American Steel Foundries, Chicago:

That the plan is not generally applicable at this time is evidenced by the fact that it is not to apply to blast furnaces or steel mills of the Ford company. It will not have any more effect on the general situation than the earlier announcement of a uniform \$6-a-day wage.

It is not so long ago since a 12-hr. day was not unusual in many industries. There has been a gradual reduction in the hours worked per day and per week in industry generally and no doubt this will go somewhat further, but such changes will come gradually and as industry can adjust itself to them.

George L. Markland, Jr., chairman of the board, Philadelphia Gear Works:

The men of our country are becoming a race of softies and mollycoddles; it is time we stopped it and turned out some regular he-men—too many paternalistic laws by city, State and nation. Any man demanding the 40-hour work week should be ashamed to claim citizenship in this great country. I see in it a gradual sinking into decay.

D. M. Weir, vice-president, Weirton Steel Company, Weirton, W. Va.:

The efficacy of a five-day week is somewhat doubtful even though the business or industry can accommodate itself to such a plan as seemingly can be done in automobile building.

In the five-day week the human element is the most important consideration. Eight hours work for five days, or 40 hr., leaves much time for recreation. Men working eight hours hardly need more than that amount of sleep. That leaves 72 hr. per week for recreational purposes, or over 10 hr. per day. This additional 8 hr. of recreation coming on Saturday makes a long weekly holiday period, which will provide an excellent opportunity for additional expenditures.

From a financial standpoint it is hard to conceive labor can benefit by such a plan and it is reasonable to believe it would be but a short time until increased wages would be necessary to meet the increased expense incurred through the added holiday.

Is the human element being abused by 48 hr. work? Certainly not, in most lines.

Charles B. King, vice-president and general manager, the Marion Steam Shovel Co., Marion, Ohio:

If the five-day work week was established to curtail production in the Ford plants on account of decreased

sales, it could probably be considered as good policy in order to retain the greatest number of employees on the payroll, at the same time reducing production by shortening the number of hours per week.

If, on the other hand, it was done with the thought of establishing a policy that might be followed by other manufacturers throughout the country, then the ill effects would be obvious—production would be curtailed and costs increased. When any movement results in reducing production and increasing costs, the public necessarily suffers, industrial progress is retarded, and an uneconomic condition is created.

Clarence E. Whitney, president and general manager, the Whitney Manufacturing Co., Hartford, Conn.:

I believe benefit will result for Mr. Ford, as he has made a wonderful record by efficiency, and it is probable he is not adopting an inefficient program at this time for his particular requirements under existing conditions.

The Ford plant is so highly specialized, it can, to a large extent, operate 24 hr. per day for five days a week, thereby having use of the enormous investment in plant and equipment, for a greater number of hours per week than most other concerns can economically operate.

If the standard of one great manufacturer, having conditions different from others, should be thrust upon all manufacturers by legislation, the economic consequences would be serious.

Mr. Ford, I believe, could not operate all of his departments on a uniform program. If he were to make difficult special tools or machinery, on a mass production program, 24 hr. per day, three shifts, passing the delicate work from one shift to another, I believe chaos would quickly result from the divided responsibility.

I cannot see the slightest danger for other employers, confronted with different problems and different conditions, so long as existing work laws are unaffected.

Paul J. Kruesi, president, Southern Ferro Alloys Co., Chattanooga, Tenn.:

My own view is that the destruction of economic wealth resulting from the World War was on such a colossal and incomprehensible scale (even in this country, where we built and then scrapped billions of dollars worth of ships, shipyards, nitrate plants and army supplies) that the work of the world cannot in this generation be done in five 8-hr. days per week.

William W. Coleman, president, the Bucyrus Co., steam, gasoline and electric shovels, cranes, etc., South Milwaukee, Wis.:

It is true that during recent years the more efficient application of power, the increased productiveness of machine tools and like advances in the mechanical arts have resulted in obtaining the same or a larger product in less time. As far as can be determined from newspaper reports, there has been no claim made that the shorter week adopted by the Ford plants has resulted from any improvement in manufacturing processes.

Up to the present moment there does not seem to be any important reason why the action of the Ford company should give much concern to manufacturers or employees generally, for what one concern may be able to do under one set of circumstances does not generally apply to an industry or trade at large.

H. C. Atkins, president, E. C. Atkins & Co., saws, Indianapolis, Ind.:

The tendency in the United States has been toward shorter hours, larger wages and the net result of the whole proposition is coming to the point where sooner or later industry in the United States is going to be like a "dog chasing its tail."

Enforced attention to business in my estimation is in the long run productive of better citizens than enforced idleness. The position of the United States at the present time, outside of one or two industries, does not justify enforced idleness, especially where that

idleness is paid for by some one, somehow. What we need in industry in the United States is a policy which will enable us to command not only our own market, but foreign markets, and if God-given daylight and time is wasted by American industry, as it will be on a five-day week, somebody else is going to take advantage of that waste.

I am not so particularly interested in what the Ford Motor Car Co. may have in its mind in cutting down production as I am in the general proposition of the greatest good to the greatest number.

Fayette R. Plumb, president, Fayette R. Plumb, Inc., hammers, hatchets, files, axes, etc., Philadelphia and St. Louis:

If the movement from a 48-hr. week to a 40-hr. week should be gradual, improvements in the manufacturing and distribution processes might so offset the loss of "man-power hours" as not to cause any actual decline from the present standard of living; but it would keep the standard from rising as it otherwise would.

The only condition under which this would not be so, would be if the total production per man per week would be as great in 40 hr. as in 48 hr., all other conditions being the same. As a matter of fact a uniform work week for all industries is a fallacy.

E. B. Leigh, president, Chicago Railway Equipment Co.:

There also are doubtless industries, particularly those operating under a five-and-a-half day week, to which it could be applied with economic advantage, as, for example, those in which the workers are on a "piece work" basis of compensation, and without any substantial reduction in output or lessened earnings to the workers. In some departments of our own industry we have found this to be true. It would not, however, apply to all industries.

From the social standpoint the shorter week could be made advantageous to the worker, should he utilize the added leisure time in such ways as would contribute to his health, enjoyment and happiness.

William L. Deming, president, The Deming Co., power pumps, hydro-pneumatic water supply systems, Salem, Ohio:

The tendency for a time evidently will be to cause dissatisfaction among the employees in other factories and in other lines.

William H. Barr, president, William H. Barr, Inc., bronze castings, Buffalo:

What Mr. Ford might do, because of his peculiar position in the industrial world, cannot be a measure for all industry. Of course, Mr. Green tells us that the American Federation of Labor workers will produce just as much in the five-day week as in the six-day or five-and-a-half day week. That is unadulterated bunk. There is not a union man who will exert himself one iota more per hour to produce more goods simply because he finishes on Friday night and not on Saturday. If it is true that there may be more production—sufficiently more to offset the lost time—it is a plain indictment of present methods of unionist work. The unions have always been opposed in every way, by speech, by legislative effort, by propaganda—to speeding up. Now they purpose to "speed up" so as to get a six-day wage for five days' work.

Erratum

In the account of the awarding of the S. Obermayer prize in THE IRON AGE, Oct. 7, page 997, among the devices commended by the committee was a self-forming sprue. This was erroneously credited to A. E. Shipley instead of to H. E. Shirley, who is brass foundry superintendent of the Blake & Knowles Works, East Cambridge, Mass., one of the plants of the Worthington Pump & Machinery Corporation.

British Steel Industry Has Problems

Many Plants Are Below American and Continental Standards—Large Outlays Needed and Syndication in Place of Individual Managements

BY JOHN CALDER

IN my last article I stated that British shipbuilders, with enlarged and thoroughly modern plants, are idle, despite accumulated orders, because the coal strike has closed the steel mills. The principal shipbuilders have each combined with large engineering and steel making concerns on the "vertical trust" plan and are "all set" with willing employees to make new records of speed and economy as soon as materials are forthcoming.

The question raised here is, Are the English steel mills equally modernized today in the full American sense? Only a few outstanding ones appear to us to merit that description.

Early Economic Advantages Gone

Willing cooperation by adequately trained workers is a condition, but it is not a guarantee of national efficiency. Just as the most modern technical equipment may be rendered ineffective and costly by reluctant or inexpert labor, so the best efforts of the workers may count for nothing if they are expended upon machinery which is antiquated or upon plant which is partly or wholly unsuited to its purpose.

It has been repeatedly said in defense of present conditions in England that Germany and the United States, because they appeared later in the field, were able to profit by British experience, and to start with the most modern appliances, and that this applied particularly to the metal trades. The iron works erected in Britain during the earlier years of the nineteenth century were well suited to the requirements of the time, when the market for iron was mainly domestic. But the initial advantage enjoyed by Britain's foreign competitors is gradually diminishing, and the time has arrived when they, too, need to reequip their plants and to adapt their industries to the new requirements of the world. Recent visits to Great Britain's competitors over the channel show that they are doing it. Britain should inquire whether its iron industry is continuing to display those qualities of commercial daring and resource by which it was once characterized. It is certainly not knowledge that is lacking.

The Factor of Science

Britain became industrial leader mainly on account of the inventions of geniuses in the field of applied science and engineering, the readiness with which her manufacturers adopted those inventions, and the spirit of adventure displayed by her merchants and shippers. Scientific leadership in steel making is to be expected from the home of Cort, Neilson, Bessemer, Mushet, Siemens, Thomas and Gilchrist, not to speak of Stead, Bell and Hadfield in the practical field and the able steel metallurgists and researchers continuously furnished by England. It was the Thomas-Gilchrist process alone that helped Germany to turn the immense deposits of minette ore in Luxemburg and Lothringen, with a phosphoric content which had baffled all their efforts, into a gold mine of indefinite duration.

We find that all British industry, which is strongly competitive, is suffering from handicaps suggesting that the third generation is wanting in those qualities

which enabled the first and second generations to hand down a valuable legacy. It has been notoriously lacking in statistical information about its own operations, but both from governmental and private action this is being rapidly remedied.

Slow to Use Electricity

Some years have elapsed since the British Coal Conservation Committee reported upon the desirability of utilizing electricity and the need for centralizing its supply in selected regions. But the industries of Britain, unlike those of its rivals, still cling to steam. The proportion of electric power to the total power employed in the United Kingdom was even smaller in 1925 than in 1910, whereas in the United States the increase in electric power was practically as great as the increase in total power.

Experience both in England and elsewhere shows that, if they started from the same line, electricity would nearly always win in the race against steam. But the older English concerns already using steam are unable or unwilling to incur the heavy initial expenditure involved in the change from one to the other. This has especially been the case since the war, for the cost of reproduction has been enormously increased, and the gradual fall in the price level since 1920 has encouraged people to postpone all avoidable capital expenditure until prices have reached rock bottom.

Many Obsolete Plants

Apart from the above facts, older companies with slack directors have been content to see their industries decay and have endeavored merely to save as much as possible by working the older plants until they become obsolete. This is the condition of some British steel plants both large and small at the present time, which have delayed too long and whose capital and credit will no longer finance satisfactory modernization. On the other hand, the Sheffield industry in special steels, exhibits all of its old versatility, and is showing new enterprise in research, mass production and specialties which promises a long continuance of prosperity for both fine quality and tonnage goods. The same wide-awakeness and unhesitating "scrapping" of obsolete equipment was noticed in several Scotch, North of England and Welsh steel works where satisfactory application of the most recent American economies to their conditions has been effected. But such action is not general, and a number of plants are bound to close down as soon as a steel surplus is created and small selling margins rule.

Continental Rivals Are Modernizing

Inspecting some of Britain's Continental rivals in steel this summer, we found that during the period of rapid deflation and depreciation of the currency the industrial equipment of Germany had been much improved. The average age of the railroad equipment, for example, was appreciably reduced, and the same was true of most of the steel plants.

For some time before the war the average age of equipment in most British industries had already increased, and it seems fairly certain to an American

observer that very few of her staple industries are providing the margin necessary for progress, though the exceptionally enterprising concern is always in evidence. Some of the non-ferrous industries there seem to be on their last legs. Zinc, for instance, was a native product till some years before the war, when the appearance of Australian concentrates called for an adaptation of existing plants, but the British manufacturers refused to budge, and Germany and Belgium took hold of the new opportunity and built up an industry based on these same concentrates.

The English copper industry is one other illustration of lack of enterprise which has placed it on a purely defensive basis in foreign markets.

The serious difficulties which the metal trades of Britain are now facing are in fact a legacy from an easy-going generation of employers. A new conception of their duty will alone avail against their powerful rivals.

Due to the coal strike and the practical shutting down of the British iron and steel plants, France had at the end of June of this year 153 iron furnaces in blast, Belgium 53 and Germany 80, while at the end of July, when our observations were made in England, there were just eight iron furnaces all told in blast in Great Britain. It is manifest that British steel makers will not find their foreign field exactly as they were compelled to leave it on May 1 of this year.

Loss of Export Trade

Eventually no exporting industry in Britain will have a heavier task in the near future than the fundamental one of iron and steel. The production of iron had been practically stationary for over three decades before the war. The British steel industry had grown, but not so rapidly as to hold its own, and the rate of growth diminished while the importation of foreign steel rose steadily. Sheet and plate manufacture grew satisfactorily, but other lines suffered increasingly from foreign competition.

The group of iron and steel interests for ten years before the war was fairly prosperous as a whole, but there was a rapid change in the relative importance of its products and trade in semi-finished steel fell off greatly. Though the war demand considerably increased British capacity and reduced dependence upon imported steel, similar extensions and in some cases new steel plants were built in other countries which had formerly been British customers. The present social and economic difficulties of Great Britain have greatly added to her handicap.

Few New Steel Plants

The steel works erected on green fields in England during the last thirty years may be reckoned on the fingers of one hand. Even the modernized plants are like cities that have slowly grown out of small villages. They reveal the circumstances of their origin, and their configuration and thoroughfares bear the mark of a remote past. The plants have been extended, but often under unfavorable conditions. Their layout is defective and restricts efficiency; their equipment is of mixed character, good here and indifferent there. Many of them have outlived their utility and should long ago have been abandoned in favor of methods which could only be adopted on new sites.

With a few notable exceptions, the blast furnaces allow all the iron to run cold, and the steel works reheat the cold pig and sell the ingot or billet to manufacturers of steel products. Blast furnace gas is wasted in a manner that, judged by twentieth century standards, is little short of amazing.

English technical articles emphasize the importance of quality and the superiority of British steel for the

purposes for which it is produced, and the Sheffield industries support this contention, but whether this is the case for all purposes is a matter on which experts differ. The important fact is that the British steel plants are usually a long way off either from the blast furnaces or from the works in which the final products are made, or from both. This fact and the added cost due to loss of heat in conversion and the failure to utilize "waste" gases in the most economical manner constitute a severe handicap.

In Germany and the United States technical conditions are more favorable to cheap production. The plants are much newer, the layout is more suitable, and stress has been laid upon the importance of conserving heat and avoiding unnecessary transport charges.

Combinations for Selling

In the United States and Germany capital is more effectively organized; standardization and specialization of plant have been pressed much further than in Britain. In Germany the steel cartel which existed before the war was one of the most powerful organizations the world had ever seen, and in America the Steel Corporation controlled a much larger output of steel products than the total of Britain. The German cartel, which was itself a separate company of which the manufacturers were members, acted as a selling agency. The functions of making and selling were kept quite apart. This cartel, on account of the scale of its operations, was able to build up an organization for research, distribution and selling which was of untold advantage to the manufacturers. In some lines the cartel has been re-formed, and there are large combines in the German steel industry like those in the United States. Thus Britain is faced with the competition of highly organized units, controlling in greater or less degree the manifold sections of the industry. Britain alone, of the great steel producing countries we visited, continues to believe in isolated enterprise and to underrate the importance of co-operation and correlation.

Britain's Chances in Steel

In view of the abnormal increase in the steel producing capacity of the world since 1914, and the failure of the world's demand, it is not unlikely that competition in steel will be very severe for some years to come. Do the British stand a reasonable chance of success under such conditions?

A new orientation of industry is called for, to make a fresh start as far as possible. The amalgamations in Britain of recent years do not appear fully to meet the new needs of the industry. Most of them accepted the steel plants as they stood, and some of these should not have been standing. They have achieved considerable economies through improvement in management, greater specialization, and more complete coordination of effort. Their scientific research on steel is unequaled, but the economies that can be achieved by technical means are strictly limited. Combinations are effective as competitive units when pitted against the smaller concerns in the same country, but they are usually not sufficiently strong to stand up against an adventurous, highly organized competitive campaign by foreign syndicates and combinations.

Largeness of enterprise in this sense we did not find on our visit this summer to be a criterion of modernity in most English steel plants. Practically all of them were idle, but some of the largest are plainly heading for a crisis through lack of willingness to scrap old equipment. Two large concerns in Scotland and four in England, however, are ready to give a

(Concluded on page 1255)

NEW ENGINE LATHE PLANT

Modern Shop Design Features Home of Boye & Emmes Machine Tool Co.

With all castings entering the shop at points at which the first machining operation is required, and thence progressing by necessary stages to the assembling department in the center, where immediate access to shipping facilities is afforded, the new plant of the Boye & Emmes Machine Tool Co., Cincinnati, engine lathe manufacturers, is designed to meet that generally admitted modern desideratum, that handling of material in production be minimized.

Fronting 90 ft. on Buck Street and running back 350 ft. on Queen City Avenue, the building is arranged so that material comes into the shop from either of those thoroughfares. Castings to be planed and milled enter the main door on Buck Street into the planer department, which is 70 x 90 ft. in plan. They then pass either to the milling machines or to the radial drills, and then to the assembly benches, where they are assembled in units and placed in stock to be used when needed.

Steel and other material requiring the first operations either on lathes, screw machines or the cutting-

off machines are introduced through a door on Queen City Avenue, about opposite the center of the shop. Here they are machined by lathes, which, together with the grinding machines, occupy a space 40 x 80 ft., or they go to the west end of the shop, to the screw machines or to the cutting-off machine. The next step takes the material to the radial drills or to the milling machines, and then to the assembly benches for assembly into units. From that point the castings go to the stock room, which is adjacent to the benches.

In the main bay at the center of the plant the complete machine is assembled. For delivery locally or to points near by, motor trucks can drive in the door on Queen City Avenue to the point where the machine stands. On the opposite side of the plant, also adjacent to the assembly floor, is a door leading to a Baltimore & Ohio railroad switching track, which parallels one-half of the south side of the shop.

The main bay, which runs the entire length of the structure, and is 29 ft. wide, is served by one 6-ton, one 5-ton, one 3-ton and one 2-ton traveling hand crane. There is 21 ft. clearance beneath the crane hooks. Both the south and north bays measure 30 x 350 ft.

The milling department, located in the north bay, is 40 ft. wide and 60 ft. long. Adjoining it on the east is the planer department and on the west are the turret lathes, occupying a space 30 x 60 ft. Separating



The Modern Appointments of the New Plant of the Boye & Emmes Machine Tool Co. are Indicated by these Views of the Lathe, Tool Room and Planer Departments

the latter from the engine-lathe department is the delivery aisle leading to Queen City Avenue.

At the east end of the south bay is part of the planer department, which extends the entire width of the plant. The south bay also contains the bench department, stock room, locker and wash rooms, paint shop and, at the extreme southwestern end, the tool room. Near the center of the shop are the radial drills, which are situated in the south bay, but extend into the main bay.

Proper heating facilities are insured by the installation of four unit heaters, supplied by the American Blower Co. These are distributed at convenient points throughout the plant, three of them being driven by 2-h.p. blower fans and one by a 3-h.p. blower fan.

Special attention has been given to the lighting arrangement. During the day an abundance of natural light is afforded by the expanse of glass, 12 ft. high, which is an integral part of all four sides of the building. The main bay, as commonly the case, exceeds the side bays in height, and practically all of the two sides of the monitor, extending above the remainder of the building, is a solid expanse of glass,

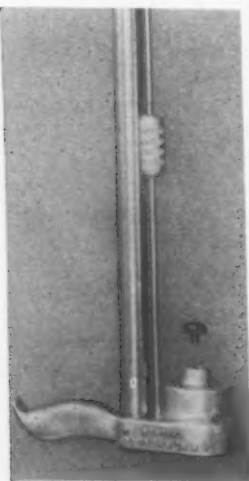
approximately 8 ft. in height. In addition, each of the three bays has 33 standard dome reflectors. Those in the main bay have 300-watt outlets and are mounted at a height of 22 ft., while those in the two side bays have 200-watt outlets and are mounted at a height of 14 ft. The floor of the plant consists of concrete with a monolithic finish.

The plant is of steel frame construction, and was designed and erected by the Austin Co., Cleveland. It may be recalled that the old shop of the company, located on the site of the new one, was destroyed by fire Jan. 27, 1926. Immediately thereafter all operations were transferred temporarily to the company's building at 2245 Spring Grove Avenue, and plans for a new structure were prepared. Seven months later production was started in the present plant. The pattern shop and warehouse will be situated on the first floor of the building, on Spring Grove Avenue, according to plans. The general offices and the engineering department will occupy the second floor.

Officers of the Boye & Emmes Machine Tool Co. are Fred W. Boye, Jr., president and treasurer, and W. T. Emmes, vice-president and secretary.

Electric Device to Measure Moisture in Sand

The time required in making laboratory tests of the moisture content of foundry sand can be largely eliminated by the use of a moisture meter, according to the R. W. McIlvaine Co., 53 West Jackson Boulevard, Chicago. This instrument, recently developed and exhibited at the foundry exhibition in Detroit, is convenient to use and affords a direct reading of the relative moisture, obtained by simply thrusting the lower end of the meter barrel into a sand heap.



The device, as illustrated, consists of a nicked barrel in which a plunger is fitted in the lower end, and to the top is attached a combined handle and milliammeter frame. The barrel is hollow for the greater part of its length and that space is used as a receptacle for eight ordinary flash light, dry cells. The plunger, which contains one electrode, is backed up by two helical springs. As the barrel is pressed into the sand, the resistance of the springs is overcome and the plunger moves back a fixed amount, thus trapping a sample of sand. All samples are claimed to be of like density because the spring tension is constant.

The plunger is attached to one side of the circuit and the barrel to the other, so that the sand sample closes the circuit as the plunger reaches its seat and the relative moisture is indicated on the milliammeter. The inner contact on the plunger strikes $\frac{1}{4}$ in. before the full sample is trapped in the end of the barrel. Thus the last $\frac{1}{4}$ -in. movement of the plunger wipes the contact surfaces to assure accurate readings. The principle of the instrument is based on the fact that the electrical conductivity of the sand varies with the moisture content.

The milliammeter, which is of a rugged type, is specially damped and is provided with a key-operated zero adjustment. A standard resistance is furnished with each meter so that the ammeter can be compensated for the condition of the batteries. The zero adjustment may also be used to set the milliammeter in cases of extreme moisture when the reading would be off the scale.

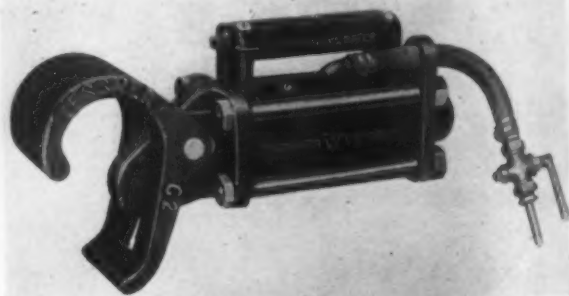
If a user prefers to read results in per cent rather than relative moisture, a sample of the sand may be

sent to the laboratory of the manufacturer and a calibration curve showing direct readings will be furnished. A button on the handle locks the plunger so that the barrel can be thrust deep into the sand pile before taking a sample.

Pneumatic Shaker for Annealing Pots

The pneumatic shaker shown in the accompanying photographs was brought out recently by the Tessmer Machine & Tool Co., Detroit, particularly for use on the annealing pot during loadings. It is equipped with a cam, hinged in a jaw, which is designed to adjust itself readily to any thickness and shape up to 3 in. The cam locks the shaker securely to the pot, flask or container, delivering the vibrations on the forward and return strokes.

The piston weighs $7\frac{1}{2}$ lb., has a $\frac{1}{4}$ -in. stroke and is equipped with three steel rings, designed to increase the life and efficiency of the shaker. The handle acts as an oil reservoir, holding sufficient oil to lubricate the piston automatically for one day's run. The body is made of semi-steel and the end caps, cam and jaw of steel. The end cap holding the spring is provided with a taper plug for removing a broken or weak spring without disassembling the shaker. The end caps are



The Cam Hinged in a Jaw Adjusts Itself to Any Thickness and Shape Up to 3 In.

held securely to the body with four $\frac{1}{4}$ -in. steel bolts. The body is equipped with 9 in. of hose to which a shut off valve is attached. The shaker weighs 50 lb. complete.

Manufacturers of saws reported products valued at \$26,781,205 in 1925, according to data collected by the Department of Commerce at the biennial census of manufactures. This represents a decrease of 13 per cent as compared with \$30,786,858 in 1923, the last preceding census year.

UNIVERSAL DIE SINKER

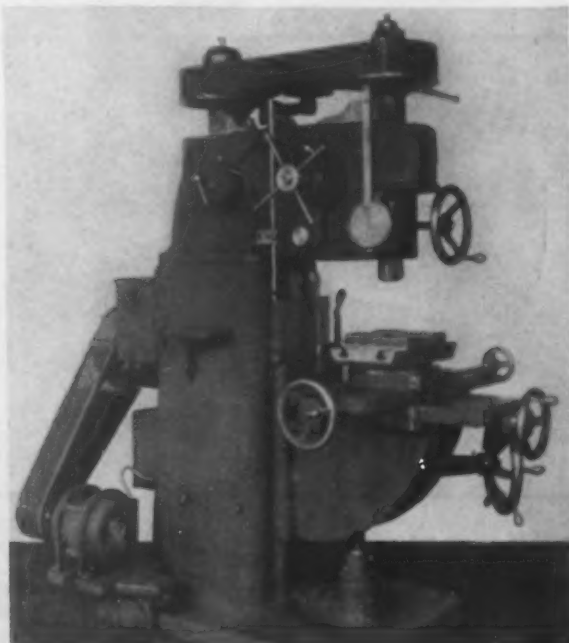
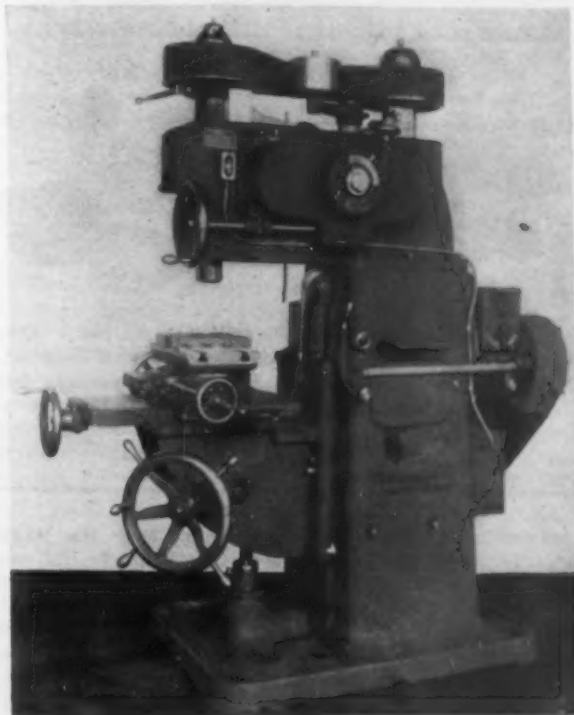
Cherrying and Straight Die Sinking Done Without Change of Set-up or Use of Attachments

A new machine of the die sinker family, designed to do both cherrying and straight die sinking operations without any changes of set-up and without the use of any special attachments, has been added recently to the line of the Pratt & Whitney Co., Hartford. Two views of the machine, which is designated as the No. 3A universal die sinker, are reproduced herewith.

In addition to all of the usual die sinking cuts, the new machine will take both roughing and finishing

The upper part of the column carries the oscillating frame and spindle mechanism on its two inside surfaces which are accurately scraped. The oscillating frame itself is balanced by a counterweight and driven by two large adjustable throw eccentrics. By means of these eccentrics the circular motion of the entire frame, and thus of the tool, is obtained.

The diameter of the circular path of the tool can be adjusted from zero to 6 in. by means of an adjusting mechanism inside of each eccentric controlled by the radius adjusting handwheel. A dial on the side of the column connected to the eccentrics indicates the diameter for which the machine is set. The oscillating frame is moved entirely by hand by means of the handwheel at the front of the head. A double binder is provided for locking the entire oscillating head solidly



The Special Feature Is the Oscillating Head and Control Apparatus and Drive Connected with It.

cherrying cuts of all descriptions. It is also claimed that it will take many types of cherrying cuts which are impossible on the regular styles of machine even with a cherrying attachment. For example, by combining the rotary table feed and the oscillating cutter movement described below, it is possible to sink a hemispherical cut in the surface of a die and to finish it up to the polishing operation with the same cutter and without the use of an attachment. A quarter cylindrical cut can be taken by feeding the cutter through an arc of 90 deg., using the dial and pointer for positioning the cutter. A second cherrying cut below the surface of the die can be taken, the only limit being the length of tool which can be used successfully without springing. It is also stated that by using the upper path of the oscillating head, the new die sinker will easily turn out an inverted cherrying cut which may be either at the surface or below the surface of the die.

Oscillating Head the Special Feature

Basically the new machine is similar to the company's previous die sinkers. It is of vertical type with the knee supported by an elevating screw and sliding on vertical ways on the front of the column. This knee carries a table which travels in both directions. The new column is of two pieces and the knee is counterweighted to facilitate adjustment. The special feature of the new machine is the oscillating head and the control apparatus and drive connected with it. It is by means of this head that the method of obtaining cherrying cuts with an ordinary die sinking cutter has been developed.

to the column so that the circular motion is eliminated and the machine is ready for ordinary die sinking cuts using the table elevating and transverse controls.

The drive to the head is by means of a single pulley and gear box which drives the pulleys on the top of the oscillating head through a set of floating bevel gears. A 3-hp. constant-speed motor is used to drive the single pulley and gear box.

An indicating dial on the oscillating head shows the exact position of the cutter in the work during a cherrying operation. This indicator dial is graduated through 180 deg. and is inscribed with six circles which represent the six even inches of radius adjustment of the eccentric sleeves. This dial plate is held in position by spring tension and may be revolved and set by means of two finger spot holes. A long finger or pointer is attached to the oscillating frame, while the dial is stationary. This finger is graduated horizontally to give subdivisions of the six even inch circles on the dial. In this manner the relative position of the pointer on the dial always represents the actual position of the tool point in the work.

The spindle of the machine is hardened and ground at the lower end and is fitted with lapped thrust washers. The lower bearing is conical while the upper one is cylindrical. Adjustments for wear are made on the lower conical bearing. The spindle is fitted with a spring collet operated by a quick-opening and closing device.

Six spindle speeds ranging from 70 to 900 r.p.m. are provided. The maximum vertical height between the working surface of the table and the spindle end is 23 in., which is the limit of work which can be

handled. The vertical traverse of the knee is 18 in., while the transverse and longitudinal movements are 12 in. and 18 in., respectively. The longitudinal and transverse hand wheels are provided with micrometer

dials graduated in thousandths of an inch. The machine occupies a floor space of 70 x 95 in. and is 93 in. high, and with regular equipment it weighs approximately 7000 lb.

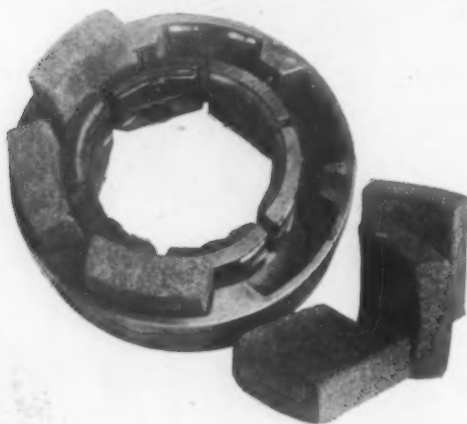
SEGMENTAL WHEEL CHUCK

Features Include Method of Holding the Carborundum and Aloxite Segments

A grinding wheel chuck incorporating new features for holding Carborundum and Aloxite wheel segments has been placed in the market by the Carborundum Co., Niagara Falls, N. Y. The device was designed

It is pointed out that as the centrifugal force and crushing strain upon the segments are absorbed by the chuck body in three directions, the strain on the clamps is comparatively slight.

The design of the new chuck represents a departure in its provision for water supply. Tilting the segments outward from the axis, permits of an increased supply of water directly at the point of contact between the segmental wheels and the work as well as between the segments. Tilting of the segments is also stressed as



The View Above Shows the Segments of the Chuck as They Are Set Into the Adapters Using a Sulphur Bond. The segments are held in the pockets by rocker clamps, as shown in view at left

and is being manufactured by the Pratt & Whitney Co., Hartford.

For some time Carborundum and Aloxite segments, products of the Carborundum Company, have been used in Pratt & Whitney and Blanchard surface grinders. The advantages of the segmental type of wheel are said to lie not only in its clean shear cutting action with ample clearance and in its increased grinding production, but also in the lower initial cost as compared to the solid wheel.

The construction of the chuck may be noted from the accompanying illustrations. The segments are held by means of a series of clamping bolts and rocker bearing locks within a heavy ring or chuck body. The chuck ring or body is designed to provide strength and rigidity and both body and clamps are of special "gun iron." The segments are mounted in pockets inside of the chuck body or ring and are held securely by a series of rocker blocks provided in the chuck body and on the faces of the outer clamps so as to compensate automatically for any irregularities in the segments. The chuck body takes up the entire centrifugal force, a design stressed as providing a maximum factor of safety.

An outstanding feature is the method of holding the segments. By means of the rocker blocks in the chuck body and on the faces of the outer clamps, close contact is said to be provided. Each segment is held in position by independent clamps on both ends. As the curvatures of the outside and inside of the segments are concentric, any crushing tendency of the ends, and consequent endwise movement of the segments while under strain do not tend to loosen the hold of the clamps. Irregularities in the segments are taken up without undue strain at any point on the segments and the danger of cracking or chipping the segments is eliminated. Clamping bolts are of stainless steel, heat treated, and rocker blocks are of bronze castings.

When new, the segments rest directly on the bottom of the chuck; and when worn and reset in the second position they rest on the top of the inner clamps which have been pulled forward by the bolts provided for the purpose. In either case the segments are driven by the heavy partitions integral with the chuck body.

preventing the water from climbing over the wheel guards. Another advantage of the tilting is the convenience in grinding close up to projections on the work.

Adapters are provided to permit the use of worn segments and thus effect economy by reducing the loss in stub ends. When new, the segments project $2\frac{1}{4}$ in. beyond the mouth of the chuck; when they rest in the second position they project 2 in. For still another position adapters are provided. The extra holders for which the worn segments are held in a sulphur bond. The adapters are then mounted in the chuck and the segments can be used until worn down to $\frac{1}{4}$ in.

Accessibility of the clamping and adjusting device is another feature of the chuck, the operator being able to make all adjustments without leaving his working position in front of the machine. Only one size and type of segment is employed. They are 6 in. long, 7 in. high with a 2-in. face, and are curved on a diameter of 22 in. The segments are interchangeable with all wheel chucks from 18 to 30 in. in diameter using from 6 to 11 segments according to size of chuck.

Segments of Carborundum are recommended for surfacing cast iron, brass, bronze, aluminum and other metals of low tensile strength. For surfacing of steels, malleable and metals of high tensile strength Aloxite segments are recommended. These segments, in either Carborundum or Aloxite, are supplied in all standard grits from 16 to 30, for various classes of work and finish.

The direct-current motor which will drive the 54-in. blooming mill at the Homestead Works, Carnegie Steel Co., has been shipped by the Westinghouse Electric & Mfg. Co. The motor which is of 8000 hp. capacity has a total weight of 625,000 lb. The overall length of the shaft is 26 ft. 8 in. and the frame has an outside diameter of 20 ft. The motor obtains its power from a flywheel set which consists of two 3500-kw., 700-volt generators operating at 375 r.p.m. Three 50,000-lb. flywheels are used to equalize peak loads. The set is driven by a 5000-hp. induction motor. The overall length of this set is 48 ft. 8 in.

Gear Drive for High-Power Diesel Locomotive

Efforts to utilize the Diesel engine for rail traction have led to various solutions. The main difficulty lies not so much with the engine itself or with the under-frame, as with the means employed for transmitting the power from the engine to the driving wheels. The means available for this purpose are electric current, hydraulic pressure, compressed air, or mechanical transmission by means of gears. Of all these, gears give the simplest arrangement.

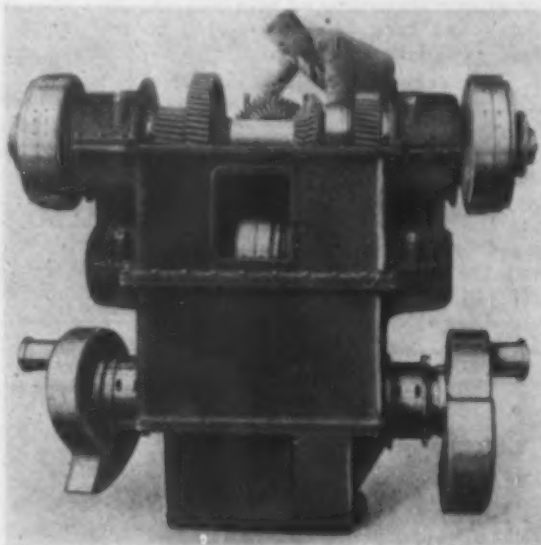
The Russian Government was the first to hazard adapting gear transmission to a high-power locomotive. A photograph and brief description of a Diesel locomotive with a gear transmission system built for the Russian Government, were published in *THE IRON AGE* of July 8, page 91. Professor Lomonosoff, under whose supervision the plans for the locomotive were prepared, called upon the Friedrich Krupp Co., Essen, Germany, to design and supply suitable gears for the purpose. These gears were delivered about a year ago, and the locomotive, which is being built by the Hohenzollern Co., Düsseldorf, Germany, will begin its trial runs within a few weeks. About 1000 kilometers (62 miles) have already been run on a test bed.

The gears are designed to transmit a maximum of 1200 hp. at three speeds, the respective gear ratios being 1:7, 1:4, and 1:2.

Three electro-magnetic clutches corresponding to the three speeds were supplied by the firm of Magnetwerk, Eisenach, Germany. As the Diesel engine is arranged lengthwise, whereas the jackshaft actuating the coupling rods has to be placed transversely, it was necessary to interpose a bevel gear. The restricted space available for the gears called for the smallest possible dimensions of the bevel wheels. It therefore became necessary to risk transmitting 1200 hp. by

means of bevel gears having a maximum diameter of 500 mm. (nearly 20 in.).

The gears are said to have successfully undergone a series of severe tests. The bevel gears were made of steel of the highest grade, which, in addition, was subjected to special heat treatment. Since the other gears of the three-speed train are, in part, also subjected to

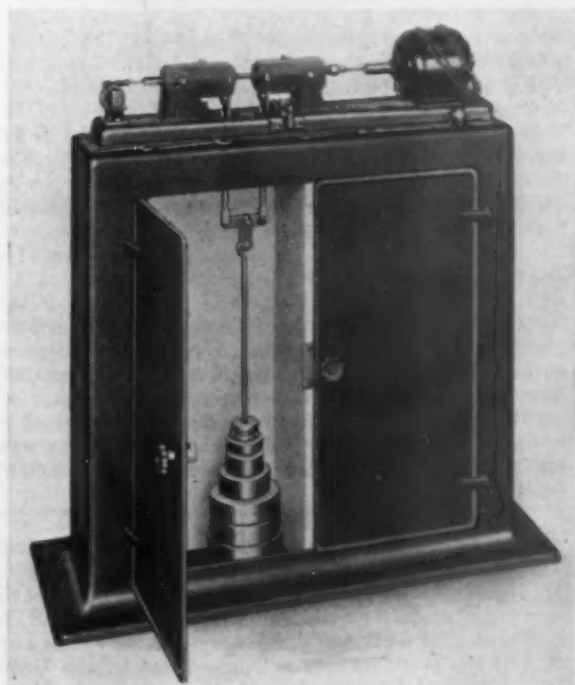


Gear Drive for Diesel Locomotive With Part of Gears Exposed

very heavy stresses, while rotating at considerable speed, it was necessary to give close study to questions of material and design.

Moore Machine for Testing Metals for Fatigue

A special design of rotating beam machine has been developed by R. R. Moore, engineering division, Air Service, McCook Field, Dayton, Ohio. Mr. Moore has done considerable research work on the fatigue of metals, several of his papers on this subject having been presented before the American Society for Test-



The Moore Fatigue Testing Machine. Space is provided with shelves for test specimens on the right hand side

ing Materials. His machine aims at making the running of fatigue tests a routine matter rather than a research problem.

The machine is emphasized as covering five important points: It is a plain bearing machine, calculated to provide quietness and no vibration; it has a permanent moment arm to insure accuracy and consistency between tests; it has unrestricted beam action; it employs a short and simple specimen; it is adaptable to various lengths of test specimens.

It consists essentially of two light aluminum housings each of which supports a journal. The ends of the test specimen are attached firmly within a tapered hole in the journals. The housings are supported on fulcrum pins and serve as a mounting for the journal bearing and as a means of applying the load. The load is transmitted to each housing through a hanger yoke, the ends of which are fitted with knife edges to rest in the vee blocks mounted on the housing. To the bottoms of the yokes are attached hanger arms which are joined at the lower ends by an equalizing bar, from the center of which the load is hung.

The load is built up in units of 10 lb. and fractions. The weights are of a special design to facilitate the operation of loading. The base upon which the machine itself is mounted, as shown by the illustration, is a heavy cast iron cabinet with doors. The weight of the base helps to eliminate transmitted vibrations from surrounding machinery. The closed doors hide the weights from view and protect them from being accidentally disturbed during the test. One side of the cabinet is fitted with shelves for keeping test specimens and with compartments for tools. The other side, which incloses the loading device, is sufficiently large to contain the weights that are not in use. The apparatus is therefore a unit complete in itself.

The calculation of the necessary load for any desired stress is reduced to a single multiplication by a table supplied with the machine. Each machine is provided with an automatic throw-out switch so that, when the specimen breaks, the motor is cut out. The apparatus is being put on the market by the Thompson Grinder Co., Springfield, Ohio.

TUBE CUTTING-OFF MACHINE

Two Tool Slides and Automatic Chuck Provided —All Gears of Steel

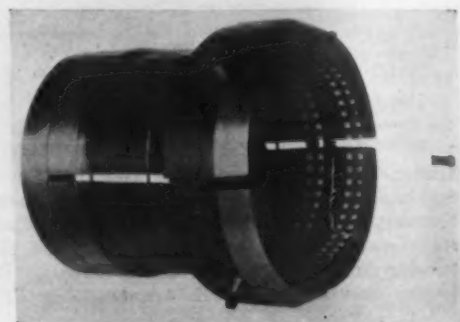
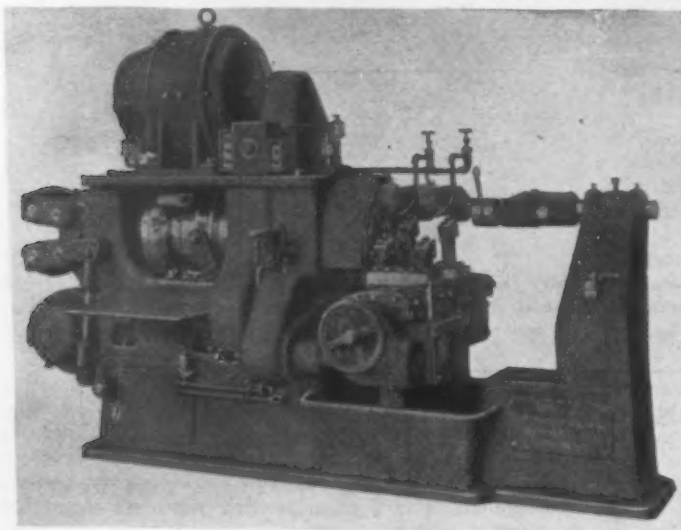
The cutting-off machine here illustrated, intended for production cutting of both thin and thick wall steel tubing and bars, has been placed on the market by Bardons & Oliver, Cleveland.

The machine is available in four sizes with 6, 8, 10 and 14 in. maximum capacity, respectively. It is equipped with two cutting-off tool slides, one at the front and one at the rear. These slides travel on a heavy saddle mounted directly on the front end of the head, thus permitting chips and lubricant to fall freely into the pan beneath. The power feed clutch is engaged by the operator's right hand, and at the same time, the air chuck closing the collet is operated by his left hand. The cut-off slides then feed in simultane-

collet is controlled by a four-way valve on the front of the head of the machine.

The same motion that opens the collet brings the feed rolls into contact with the stock, this automatically engaging the roller feed. The roller feed gear train is driven by a 2½-hp. variable-speed reversing motor, which permits convenient control of the rate and direction of feed of the stock. This motor should have a speed range of at least 2 to 1 (600 to 1200 r.p.m.) and be provided with reversing type controller. The stock stop is carried on a heavy bar at the rear of the machine and withdraws automatically after the chuck is closed and the machine is started.

A chamfering attachment is available, one form of which, for tubing only, being shown in the illustration of the machine. The arms carrying the cutters are attached to the same bar as the back stop and operated simultaneously with the cutting-off tools, by means of a second air cylinder located in the pedestal at the right-hand end of the bed. This movement is controlled by the air valve shown on the front of the pedestal.



The Machine Is Intended for Production Cutting-off of Both Thin and Thick Wall Tubing and Bars. The largest and smallest hinged-type collet used is shown in the separate illustration

ously and at the end of the cut quickly return to the starting position, this rapid return being automatic. The slides are sufficiently wide to carry one or two or more tool holders, both front and rear, so that several pieces depending upon the length, can be cut off simultaneously. All gears are of steel and a safety shearing pin is provided in the feed train.

An air-operated collet form of chuck is employed, the master collet being of the company's hinged type. The false jaws for holding different sizes of stock may be changed conveniently without removing the collet from the spindle. Opening and closing of the

As many chamfering arms are needed as the number of pieces to be chamfered at the same time.

Three motors are employed on the machine, the main drive motor; the roller feed motor; and ½-hp. constant-speed oil pump motor. It is recommended that the main drive motor have a speed range of 3 to 4 or 4 to 1, depending somewhat on the nature of the work. The 6-in. machine occupies floor space of approximately 62 x 124 in., and the shipping weight, with motor, is about 13,000 lb. The largest machine, 14 in., requires 67 x 140 in. floor space and its shipping weight with motor is approximately 23,000 lb.

Nearly 180,000 Items Tested by Bureau of Standards in One Year

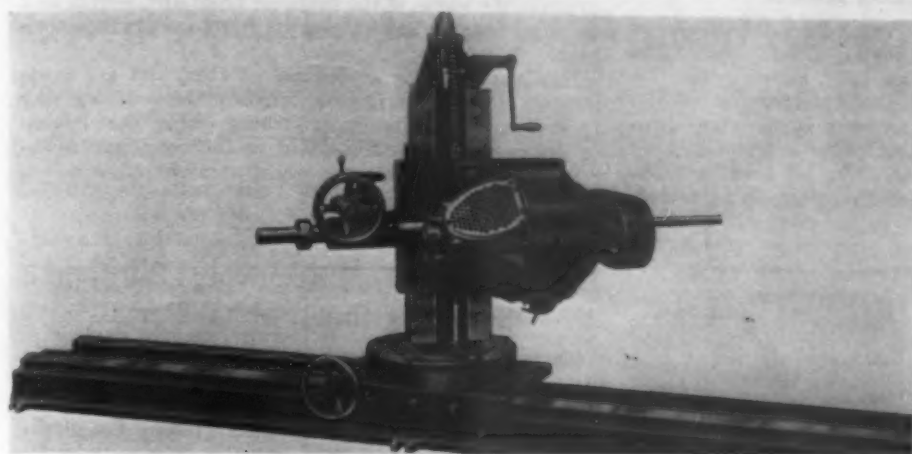
Nearly 180,000 items were tested by the Bureau of Standards during the fiscal year ended June 30, 1926. The fee value of this work is estimated at over \$675,000. Both these figures show considerable increases over the previous year, when the number of items was about 171,000 and the value of the work about \$544,000. The principal increases have been in the testing of clinical thermometers, engineering materials, length measuring instruments, hydrometers and engineering instruments.

Of the items tested, 62,648 were for the public, 68,930 for government departments, and 48,271 in connection with the Bureau's own work of research and standardization. The only actual money received is in connection with the public tests, the fees for which amounted to \$52,032.89. This money is turned into

the United States Treasury. The Bureau is sometimes placed in the position of having to refuse tests because of lack of facilities, even though the person submitting the material is willing to pay for the work.

The number of separate determinations involved in a single test is often very great. Last year the testing of these 180,000 items involved nearly 500,000 determinations.

The American Manganese Steel Co., Downey Road and Slauson Avenue, Los Angeles, following the \$200,000 investment in buildings completed only five months ago will soon start another addition, according to H. A. McPherson, general manager. Steel for the framework of a 60 x 100-ft. building will be erected by the Union Iron Works of Los Angeles. A 10-ton traveling crane will be installed as well as a heat-treating furnace. The cost of this new building and equipment will be approximately \$50,000.



Horizontal Drilling Machine for Drilling Oil Holes in Diesel Crankshafts and Other Work. The machine is portable and various lengths of bed may be furnished.

Horizontal Portable Drilling Machine

A portable deep hole drilling machine designed primarily for drilling oil holes through the throws of the large and heavy crankshafts of Diesel engines is shown in the accompanying illustration.

The machine was designed and built by the Hoefer Mfg. Co., Freeport, Ill. The bed is of sufficient length to permit the column to be traversed the full length of the crankshaft at one setting, and the whole machine may be bolted to the floor plate by means of the three ears on each side of the machine. A cut steel rack mounted on the base extends the full length of the bed, and by means of the handwheel on the saddle the column of the machine can be rapidly moved to any position along the bed. The saddle is scraped to the

scraped ways on the bed and provision is made for locking it instantly in any position.

The column is fastened to the saddle by means of a swivel bearing and can be turned and clamped for drilling oil holes at any angle. On the column is mounted a counterbalanced self-contained head on which is carried the driving motor and pick-off change gears, as shown. These gears provide ample speeds within the limits of the requirements of the machine.

The spindle and spindle quill are long enough to permit of obtaining 20-in. of feed. The spindle is mounted in ball bearings. The crank on the upper part of the column of the machine permits of 12 in. up and down adjustment of the head. The bed of the machine may be lengthened to adapt the machine to shafts of various lengths.

Cutting Torch Uses Illuminating Gas

A gas-cutting torch for use with illuminating and by-product gases, and which may be employed in cutting plates, slabs, billets, structural shapes, risers and, in general, steel foundry work, is being placed on the market by the Alexander Milburn Co., 1416 West Baltimore Street, Baltimore.

An outstanding feature of the torch, which is illustrated herewith, is the superheater, which heats and expands the cutting oxygen, also the preheating gases, raising the temperature of the cutting oxygen to approximately 100 deg. C. prior to combustion. This is stressed as increasing the temperature of the gases at the torch tip, increasing the rate of flame propagation in the burning mixture and as reducing the oxygen consumption from 25 per cent upward. A Bunsen burner, contained within the torch, burns illuminating gas which heats the cutting oxygen as it passes through a series of copper coils. This superheater is claimed to be an exclusive feature.

The torch is constructed of bronze forgings and special drawn tubing, and is well balanced. The high pressure cutting oxygen is controlled by a thumb valve, which remains fixed in either open or closed position. The arrangement of the gas tubes is intended to give the torch great transverse strength. The torch is 21 in. long and is supplied with a complete range of tips for light, medium and heavy cutting.

The heated and expanded oxygen in conjunction

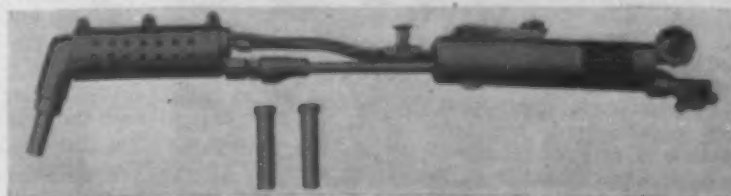
with the illuminating gas is claimed to give better penetration into the metal, a narrow kerf and sharp, clean edges, rapid and smooth cutting with a notable absence of metallic slag on the underside of the cut. It does not case-harden the surfaces cut.

Overhead Crane Manufacturers Organize New Association

At a meeting of overhead crane manufacturers in Cleveland, Oct. 19, the Crane Manufacturers Association was formed, with a membership of eleven prominent companies. Included in the association are: Alliance Machine Co., Alliance, Ohio; Box Crane & Hoist Corporation, Philadelphia; Cleveland Crane & Engineering Co., Wickliffe, Ohio; Harnischfeger Corporation, Milwaukee; Morgan Engineering Co., Alliance, Ohio; Manning, Maxwell & Moore, Inc., New York; Milwaukee Electric Crane & Mfg. Corporation, Milwaukee; Niles Crane Corporation, Philadelphia; Northern Engineering Works, Detroit; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., and the Whiting Corporation, Harvey, Ill.

Officers of the new association are: Henry W. Standart, Northern Engineering Works, president; Frank A. Hatch, Shepard Electric Crane & Hoist Co., vice-president, and Sidney Buckley, Niles Crane Corporation, secretary and treasurer. Another meeting will be held early in November.

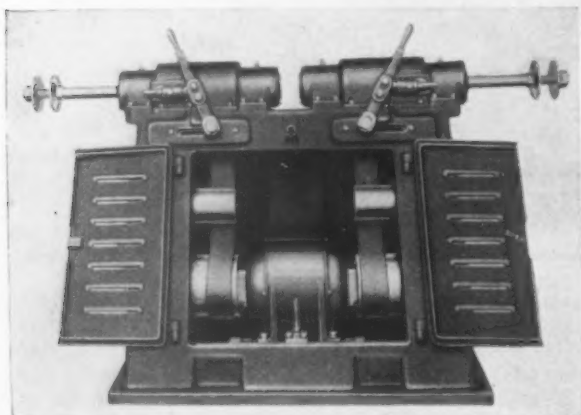
A Bunsen Burner in the Torch Burns Illuminating Gas Which Heats the Cutting Oxygen as It Passes Through a Series of Copper Coils



Selective Speed Buffer

A motor-driven buffer with two independent spindles, and available in three sizes with 7½, 10 and 15-hp. motors respectively, has been added to the line of the Hisey-Wolf Machine Co., Cincinnati.

Either spindle of the machine may be stopped independently of the other, this being accomplished by means of belt shifters at the rear of both spindles. Operating in unison with the belt shifter, an adjustable



Either Spindle May Be Stopped Independently of the Other. All parts of the machine are accessible.

brake engages when the belt is shifted on the loose pulley, the spindle being held stationary until the belt is again shifted. The belt tension may be regulated conveniently by adjusting levers provided at either end of the machine. Further adjustment may be obtained from the motor which is mounted on a hinged platform equipped with screw adjustment. Two large doors at the rear permit of convenient access to the entire machine.

Ball bearings, 12 in all, are used throughout and are provided with ample means of lubrication. Safety automatic motor starter with push button control is standard equipment. Spindle speeds considered best for average work have been provided, but the machine may be arranged for speeds of 2400, 2600 or 3000 r.p.m. if desired. The right and left-hand spindles of the machine may also be arranged to run at different speeds.

Flexible Coupling of Simple Design

The Falk Corporation, Milwaukee, has placed on the market the flexible coupling shown in the accom-



The Coupling Is Made Up of a Steel Spring in Segments, Two Flanged Disks and a Steel Shell

panying illustration, which is available in standard sizes from 1/3 to 20,000 hp. at 100 r.p.m.

In addition to eliminating the hazards of all ordinary misalignment, the torsional resiliency of the coupling is said to safeguard the driving unit from the destructive vibration of the driven machine. It is of simple design and consists of a tempered steel spring in segments, two flanged steel disks with slots

into which the spring fits, and a steel shell. The shell protects the parts of the coupling from dirt, serves as a fastener for the spring and as a container for lubricant.

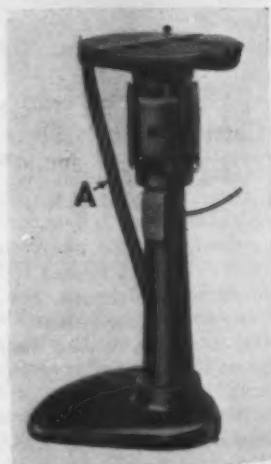
All parts of the device are of steel and are made to close limits. Shafts connected by the coupling may be disconnected without disturbing either the driving or driven machine. Alinement of the couplings is accomplished by means of a short straight edge and a set of feelers.

Disk Grinder for Removing Burrs and Surfacing Small Metal Parts

A 15-in. horizontal disk grinder designed for use in removing burrs from small metal parts and at the same time providing a flat surface, has been placed on the market by the Porter-Cable Machine Co., Syracuse, N. Y.

In operating this grinder, which is shown herewith, the operator sits in a chair beside the machine and rests his arm on the guard plate. Using his elbow as a pivot, he moves his hand through a small arc, at one end of which is a box containing the parts to be burred and at the other end is the revolving disk.

The machine is intended for use by automotive parts and other manufacturers for burring small parts after milling, pressing, stamping and screw machine operations. It saves hand filing at the bench, and advantages claimed for this machine over an emery wheel are that grit, dust and sparks are removed, a flat finish is secured, danger from breaking wheels is eliminated and production is increased by having a proper



Burrs May Be Removed and Flat Surfaces Rapidly Produced. The machine operates from a lamp socket

support for the arm, thus expediting feeding. A safety feature is the housing which incloses the edge of the disk.

The vacuum dust remover consists of fins cast into the back of the metal disk, proper outlets for the dust and a metal hose to carry it away. The revolutions of the disk produce a vacuum in the outlets which suck in the dust and blow it out through the exhaust hose shown at A. For work requiring more than one-half of the disk the guard plate may be removed by taking out two thumb screws, and the auxiliary guard shown at the right of the illustration may be swung to one side or removed altogether. The machine is portable and being motor driven from lamp socket or power line, it may be used conveniently in any part of the shop.

The heavy iron disk, which is carefully balanced after machining, is supported by an oversize thrust bearing built into the special ½-hp. General Electric Motor. It is controlled by a two-pole push button switch located in the pedestal in which all wiring except the rubber covered conductor cable is concealed. The disk is 15 in. in diameter and is 40 in. from floor. The cutting speed of the disk is 3500-6000 ft. per min., depending on the part of disk used. The overall dimensions of the machine are 20 x 22 x 40 in.

Fabricators Open Annual Meeting

Progress of Educational Program of Institute of Steel Construction Outlined by Executive Director Abbott at First Session

"THE structural steel industry is passing through a period of readjustment brought about by a change in economic conditions, but there is every reason for a feeling of optimism," said Charles F. Abbott, executive director of the American Institute of Steel Construction, in his report at the first session of the fourth annual convention of the institute, which opened Oct. 26 at the Greenbrier, White Sulphur Springs, W. Va., and will continue through Oct. 30.

"Real ability and wise leadership are capable of coping with every contingency," he continued. "The industry is well supplied with men of talent and resourcefulness. They are abreast of the times. As they encounter problems they overcome them and move on to greater achievements.

"Before steel there lies a great future. The decades ahead will see taller buildings and larger bridges than have yet been conceived. The use of structural steel is in its infancy and ever increasing demands will be made upon this industry. Greater markets will ensue as new uses develop. In the not far distant future, as consumption increases through a wider recognition of the advantages of steel, the chief problem will be one of conservation.

"The structural steel industry is being revived by organized cooperative effort and the inauguration of modern business methods. The time of narrow individualism has passed. We have entered upon an era in which all members of an industry must work together for individual betterment. The institute's program, based upon educational effort, points the way, on a safe course, to the further development of the industry."

Marketing a Major Problem

It was pointed out in another part that the institute's activities during the last year have followed the educational program laid down at the Pittsburgh convention in 1923. "We have recognized that our major problem is the market," said Mr. Abbott. "The use of structural steel has not increased as it should have. . . . The market requires as much attention as production, and the right kind of attention, directed through the medium of a well-organized industry, results in better all-around business conditions. There are innumerable operations in which structural steel should be used, but to make sure that it will be used additional plans must be developed to win increased public and professional acceptance of our product."

Use of Standard Specification Widening

A section of the report is devoted to the institute's standard specification, which, it was shown, is being adopted or used by 16 more cities than last year. On this it was said:

"Sixty-three large cities have either adopted, or are permitting the use of our standard specification. This is an increase of 16 cities over last year. The industrial commission of Wisconsin has adopted our specification for all cities and towns in that State. The Florida State Hotel Commission has likewise adopted the specification.

"The adoption of the specification in 42 western cities has been recommended by the Pacific Coast Building Officials' Conference in the 'First Preliminary Draft' (printed booklet) of a proposed uniform building code. Satisfactory progress toward adoption is being made in New York, Philadelphia, Chicago, St. Louis; the only major cities in which our specification is not in use at the present time.

"The incorporation of essential parts of the specification in the final report as issued by the building code committee of the United States Department of Commerce will prove of material assistance in furthering uniform standard practice. Further aid in the same

direction was given by the action of the New York Building Congress, which incorporated in its standard specification for structural steel and iron the institute's publication 'Steel Construction,' together with our specification, and code of standard practice.

"The report of the joint committee, representing the American Institute of Steel Construction and the American Society of Civil Engineers, unanimously recommending the indorsement of the 18,000-lb. unit stress included within our specification should set at rest for all time any doubt as to the safety of this stress. This feature is most important in a specification that is benefiting the producer through an increased use of steel and the public through substantial reductions in costs.

"It has been estimated that the country-wide use of the specification will cut the national building bill by \$50,000,000 a year, and it should be noted that through this single activity the institute is more than justifying its existence."

General adoption of the institute's code of standard practice, said to be regarded as the most constructive document of its kind ever prepared for any industry, would, it was stated, make possible many additional economies for the public. The steady increase in the use of this code was pointed to as evidence of the growing recognition of its value.

Authoritative Reference Book Compiled

Copies of the institute's standard handbook of steel construction, which has required nearly three years to prepare, have been distributed to members in preliminary form. The publication of this handbook was stressed as another step in carrying out the standardization of industry as suggested by Secretary of Commerce Hoover. The use of this authoritative book of reference will, it is thought, eliminate much of the confusion that has existed in the past.

The report announces the appointment of C. Alex Miller as the first of a staff of field engineers to operate under the supervision of the institute's chief engineer, Lee H. Miller. C. A. Miller has had 17 years' experience in the construction industry as draftsman, contracting engineer and teacher. For several years he was in charge of designing office and factory buildings for the National Lamp Works of the General Electric Co. He was on the faculty of the Case School of Applied Science, Civil Engineering Department, Cleveland. He is an associate member of the American Society of Civil Engineers.

It is planned to locate a field engineer at each strategic point in the United States and Canada, in order that they may work with members in promoting the program of the institute.

Technical Research Urged

The need for technical research was another of several subjects taken up in Mr. Abbott's report. On this he said:

"Industries today are made and broken by scientific discoveries. The widening of markets, the discovery of new uses, and the reduction of costs, offer fertile fields for the exercise of industrial wits. No longer, without constant attention to technical research, can any industry survive the maelstrom of competition.

"The possibility of the discovery of new uses for structural steel is very great. Technical research applied to the many problems affecting its present uses would result in economies that would tend to extend its market. One of the best ways to beat competition is to put scientific brains to work for us.

A more satisfactory system of fireproofing, the es-

(Concluded on page 1254)

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Favorable and Unfavorable Factors Affecting Business
May Be Summarized as Follows:

Favorable Factors

1. Commodity prices more stable.
2. High level of retail trade.
3. Low mercantile inventories.
4. Total volume of production not excessive.
5. September employment increased, and labor purchasing power continues large.
6. New enterprises increased in September, while business failures were relatively few.
7. Money not tight.

Unfavorable Factors

1. The P-V Line declined in September.
2. Decline in bank debits.
3. Decline in building activity and structural steel sales.
4. Decline in automobile industry.
5. Decline in the stock market.
6. Decline in exports (trend).
7. Farm prices relatively low.
8. Political disturbance.

IRREGULARITY has increased in business and a trend toward lower levels is evident in a larger number of cases. The supporting factors, however, have considerable weight and the present indications are that any recession will be quite gradual and orderly.

WHERE are we in the business cycle? Or should the question be, what has become of the business cycle? For 25 or 26 months business has on the whole shown an irregular but fairly sustained expansion. This somewhat exceeds the usual period of uptrend in a business cycle and a good many persons have expressed the opinion that business cycles are a thing of the past.

The period since the middle of 1924, however, has not been much longer than the upward trend from the middle of 1921 to the peak in early 1923 which lasted 22 or 23 months. The writer is no believer in exact and rigid cycles in business and does not base his reasoning on such an assumption. Past experience with business trends, however, does show some period-

icity in the ups and downs which tends to confirm the existence of cycles and, taken together with other indications in the present situation, leads to the conclusion that business is now at peak levels. It follows that recession in business is probably near. The unfavorable factors in the situation appear to be the stronger, and, as the business indexes indicate that expansion has ceased after a long rise, experience suggests a downward readjustment.

The volume of railroad tonnage making due allowance for seasonal conditions, reached a peak in July (Fig. 1). The figure for August was lower than that for June, and September volume did not come up to that of July. Probably the high point for the year has been passed. When the present rush of coal for export

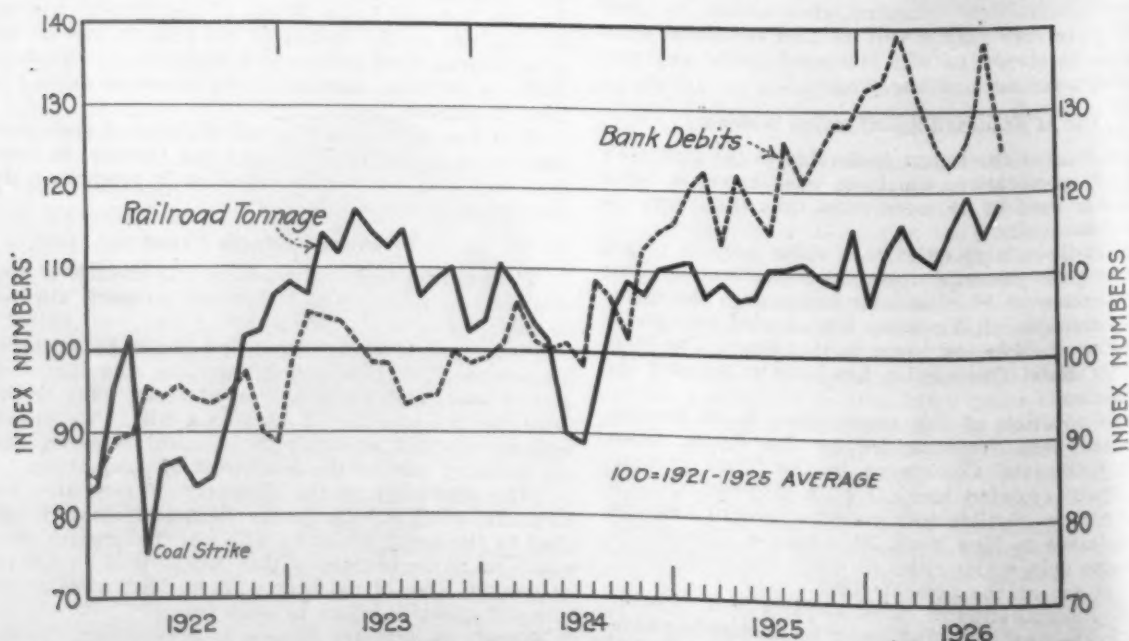


Fig. 1—Drop in Volume of Bank Checks Likely to Continue Until Below the Curve of Railroad Tonnage. The latter, representing industrial output, due for moderate readjustment, but recession in bank debits will be caused chiefly by deflation in stocks and real estate

In This Issue

Says steel plate consumers will continue to grow more exacting in their demands.—Variation in gage from side to center of the plate (caused by "mill spring") will be avoided by changes in the design of the mill, possibly bringing about a five-high mill.—Page 1198.

Advantages of high-manganese pig iron outweigh disadvantages.—Makes better steel and saves fluorspar and ferromanganese. Best results are obtained when manganese in the iron is from 1.50 to 2 per cent.—Page 1193.

Deflation in speculative values of securities and real estate lies ahead, Dr. Haney predicts.—Says these have been the chief unsound spots in the business situation.—Page 1217.

Is there any danger of steel structures corroding and collapsing in time?—No case has yet occurred during the 35 years structural steel has been in wide use. House wrecker says he has never seen a structural steel member dangerously corroded.—Page 1201.

Five-day week finds little favor among manufacturers.—Consensus of opinion is that the United States cannot now afford itself the luxury of a 40-hr. week without suffering a decline in the standard of living.—Page 1202.

Makes low-phosphorus pig iron from an all-steel scrap charge.—River gravel is added to make up the slag volume. Southern steel company finds it is cheaper to make the iron this way than to pay the freight on low-phosphorus ore from the North.—Page 1199.

Finds that under water or in soil the composition of steel has little to do with its resistance to corrosion.—Ordinary Bessemer steel is apparently as durable as puddled iron or ingot iron. Factors external to the metal control the rate of corrosion.—Page 1200.

Arc welding reduces cost of making oil-tight joints in tanks and other vessels.—The experience of the General Electric Co. is that it is 15 per cent cheaper than riveting.—Page 1195.

To keep sulphur content low in making steel.—A deep bath in a tilting furnace will remove sulphur faster than a shallow bath in a stationary furnace, says speaker at Institute meeting.—Page 1197.

What is the business outlook?—Though the high sustained volume of retail business supports the opinion that the total industrial output is not excessive, the general indications are that a moderate recession in business is probably near, says Dr. Haney.—Page 1217.

Unwillingness to scrap obsolete equipment severely handicaps English steel industry.—A great many English steel mills are dying from obsolescence. Their owners are making no attempt to save them by installing modern equipment, which would permit competition with Continental producers.—Page 1204.

Find that higher transportation cost does not prevent New England from competing for business in machinery and finished metal products.—The advantage Midwest manufacturers enjoy in being nearer to raw material sources is an unimportant factor in competing on a price basis.—Page 1249.

Tells how the national building bill can be cut about 50 million dollars a year.—Adopt the 18,000-lb. unit stress specification nationally, says structural steel association official. Sixty-three large cities have already adopted it, 16 more than last year.—Page 1213.

Steel Corporation to make steel direct from the ore.—The Hornsey process, which eliminates the blast furnace operation, will be used in the new plant being built at Lorain, Ohio.—Page 1227.

Looks for further consolidations among American steel producers.—The growing problem of making a fair profit will force steel companies to combine for the resulting economies in manufacturing and distribution, says A. I. Findley. The success of the European cartel would also tend to stimulate this movement.—Page 1221.

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Has Production Exceeded Needs?

YOU can see no ominous dark clouds in the steel situation. Everywhere the evidence is that steel has gone quickly into use. Unabsorbed stocks are regarded as fairly normal, with current effort bent to make them even smaller. Why then, asks the observer, should there be a putting-on of the brakes?

Here is where our production charts help to supply an answer. Take the one on page 1079, issue of Oct. 14. The trend line there shows the gradually increasing consumption of steel, because it is an averaging of the fluctuations of production over a long term of years. The absorbing capacity for the last twelve months appears to be roughly 140,000 tons per day, whereas production has averaged in that period over 153,000 tons a day. Simultaneous buying (which for other than consumption goods would mean a halting before there is a repetition of such buying), would account for making 47,610,000 tons while theoretically needing 43,500,000 tons.

For News Summary See Reverse Side

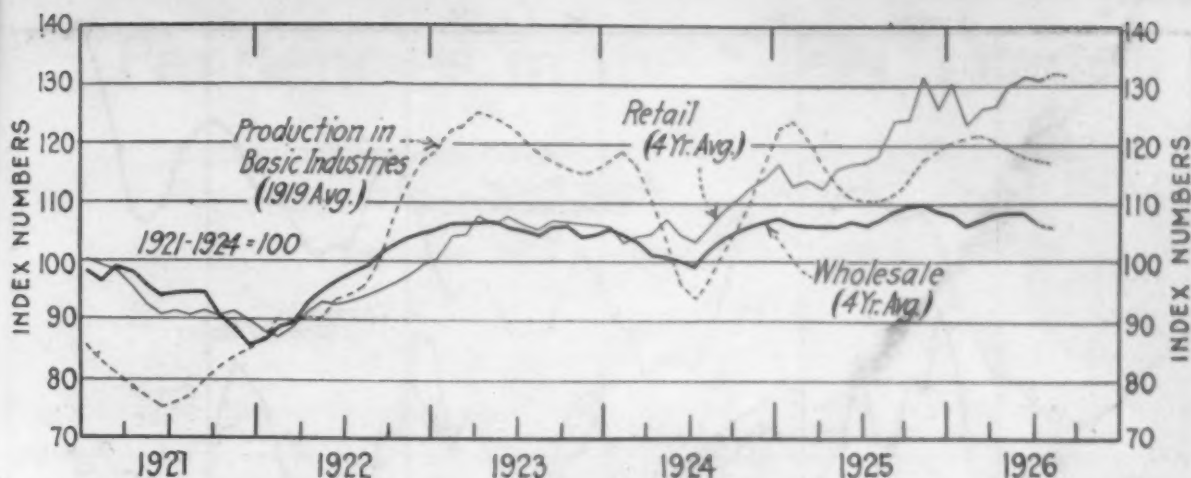


Fig. 2—Outstanding is the Continued Large Volume of Retail Trade. The fact that it is so far ahead of the rate of production in basic industries (even admitting current reports of some retail slackening) speaks for a fair balance rather than excess in industrial output

subsidies, building activity declines, and automobile production falls off, a smaller volume of railroad freight traffic will necessarily result. In this connection, it may be noted that production in basic industries reached the lowest point of the year in August.

Bank debits reflect the dollar value of business exchanges and speculation. The effects of the installment plan in expanding retail trade and of the large turnover in the stock market, both appear in the volume of bank checks. This index has long been abnormally high in comparison with the physical volume of trade as measured by railroad tonnage.

But the monthly volume of bank debits has been very irregular this year. The peak was reached in March; then came three months of recession, followed by recovery in July and August; in September a sharp break occurred. The secondary peak reached in August was not up to the March level and September debits fell below July. The broad trend is thus downward and October will probably witness a further decline.

Bank debits measure in part the speculative inflation that has existed in stocks and real estate, and the bank debits curve is probably due to fall below the curve of freight traffic. In our opinion deflation in the speculative values in stocks and real estate lies ahead and a moderate readjustment in the volume of industrial output. The latter, however, will probably be much less severe than in the former, for the chief unsound spots in the business situation have been in stocks and real estate.

Does Not Point to Excessive Industrial Output

PRODUCTION in basic industries, retail trade, and wholesale trade have continued in a similar position relative to one another for several months. As

indicated in the second chart, (Fig. 2) the trend of these three indexes of industry and business shows signs of tapering off, but all are still fairly high and retail trade is at record levels. In fact, the volume of business at retail continues to be one of the outstanding favorable factors in the situation.

The second chart is of interest as throwing light on the question of over-production. In early 1923, industrial output was clearly excessive. Now production in basic industries is high compared with the curve of retail trade, but is below the indicated level of retail sales. In view of the latter fact, and also considering that production has receded considerably below the peak levels of earlier years, there is a good deal to be said in favor of the opinion that the total industrial output is not excessive. Relative over-production exists in a number of industries, but the total production of mines and factories does not seem to be out of line with the distribution of commodities through trade channels. Probably no severe decline in industry is to be expected as long as retail trade holds up. The current reports of a little slackening in retail business are therefore very significant.

Questions Which Retail Situation Arouses

How long then will the present large volume of retail sales continue? Signs are beginning to appear that even retail trade is very near the peak. It will be remembered that the curve of retail trade is adjusted for seasonal variation. It is, therefore, significant that it does not at the present time have the pronounced upward trend that it showed in the fall of 1924 or 1925. It is now little, if any, higher than it was a year ago. Has the stimulating effect of installment methods reached its limit? Will the diminished purchasing

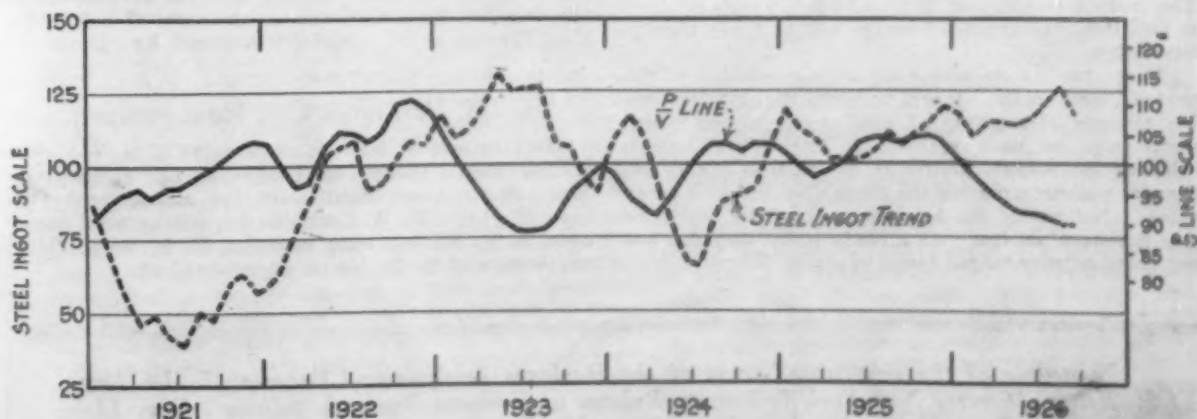


Fig. 3—The P-V Line (Representing the Ratio of Commodity Prices to the Physical Volume of Trade) Generally Anticipates the Trend of Business by About Five Months. It turned downward in December and now is well below normal. It points to a downward trend in ingot production through several months

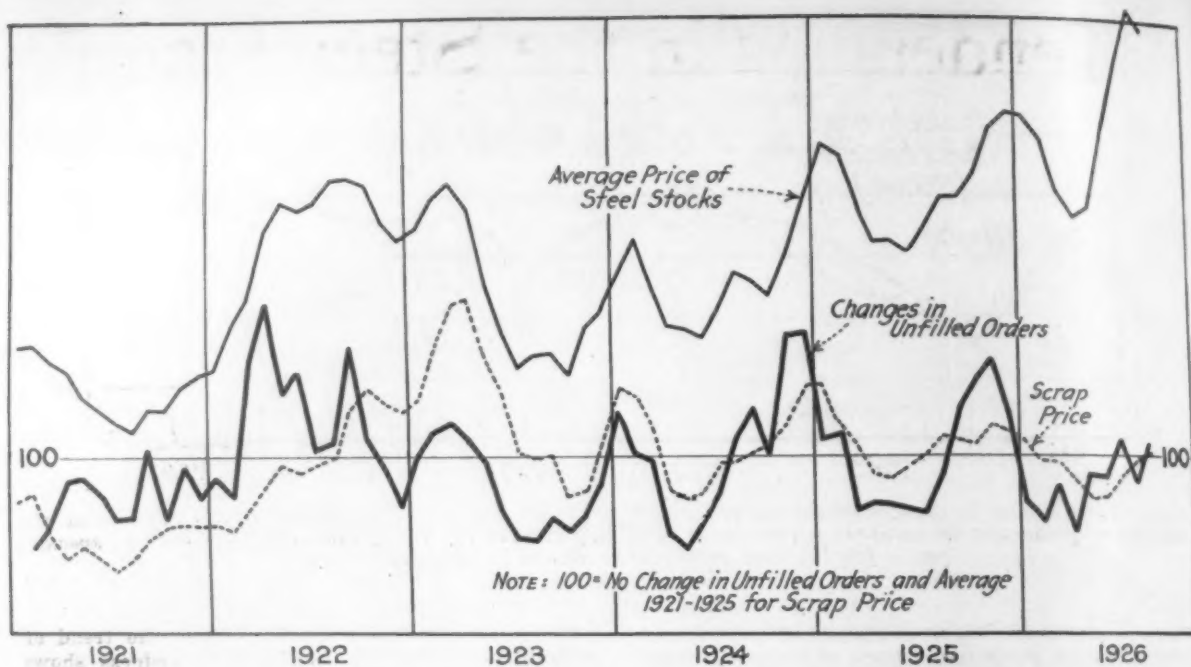


Fig. 4—The Barometers of This Chart Do Not Indicate a Pronounced Trend Either Up or Down. The decline in prices of steel securities may be considered a correction of an excessive advance

power of the South not affect retail markets? Is the decline in the automobile business not symptomatic?

Barometer of Steel Industry

SEPTEMBER developments in the steel industry will again be vindicated as a barometer of the steel industry. The P-V Line is a general barometer of business. It continued downward in September, though the decline was again slight. This trend is due to the increase in physical volume of business which gained more than commodity prices, thus indicating a weaker situation on the supply side of commodity markets.

The output of steel ingots declined rather sharply in September, considering the season, and according to current reports further curtailment is going on. Judging by the past a general downward trend in steel production is to be expected to carry through several months.

BOTH of the steel barometers shown in the fourth chart (Fig. 4) have been hesitating at low levels. The rate of change in the unfilled orders of the United States Steel Corporation during September was about the same as in July. The small increase in the unfilled orders was mostly seasonal in character and merely indicates that the sales of the Steel Corporation in that month about held their own.

Heavy melting steel scrap at Pittsburgh turned toward lower price levels in September, but the average for the month (\$17.88) was higher than in August. The indications are that in spite of last week's advance in this item, the October average will be lower than in September.

These two barometers have a close relation to the price of steel stocks. It will be noted that the September average of a group of steel stocks turned downward from the peak reached in August. This turn followed the August decline in the unfilled orders barometer and accompanied the September break in scrap prices. Neither of the barometers, however, indicates any prolonged decline. As already noted they are low but show no pronounced trend in either direction.

It seems that the rise in steel stocks that came after May far exceeded in amount any gain that was forecast by the barometers and, accordingly, part of the recent decline in steel stocks may be considered a correction of an excessive advance. It will be noted that while steel stocks in August were at the highest point reached in over five years, the steel barometers were at the lowest point reached on any rise during that period.

Drop in Fabricated Plate Bookings

WASHINGTON, Oct. 26.—Bookings of fabricated plate in September aggregated 32,816 tons, based on reports received by the Department of Commerce from 36 firms, the capacity being 48 per cent. This total compares with 45,001 tons in August, representing 66 per cent of capacity. For the nine months ended with September bookings were 322,975 tons as against 242,415 tons for the corresponding period of last year and 205,215 tons for the corresponding period of 1924. September bookings in net tons were distributed as follows: Oil storage tanks, 16,234; refinery materials and equipment, 4362; tank cars, 1248; gas holders, 871; blast furnaces, 861; stacks and miscellaneous, 9240.

To Build Blast Furnace for Ashland Plant

The Freyn Engineering Co., Chicago, has been engaged by the American Rolling Mill Co. as consulting engineer for the design and construction of a 400-ton blast furnace at the company's Ashland, Ky., plant.

G. H. Williams Co., Reorganized

To take care of the expansion of the G. H. Williams Co., builder of buckets for excavating and rehandling, Erie, Pa., a reorganization of the management has been effected. W. W. Cochrane becomes general manager, J. D. Harter, sales manager, C. D. Buoy, chief engineer, and H. H. Neeve, superintendent.

Schedule of the next installments of the *Business Analysis and Forecast*, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Nov. 11—Activity in Steel Consuming Industries; Nov. 18—Position of Iron and Steel Producers; Nov. 25—General Business Outlook.

Tendencies in the Steel Trade*

Economies and Improved Methods—Search for New Uses
for Steel—What of Present Buying Practice—Likely
Influence of Foreign Consolidations

BY A. I. FINDLEY†

NO set of men have more cause to know that we are in a new day in business than those engaged in the making, the selling or the using of steel. Every man here has had ample proof in his own experience that the old order has changed and that constant adjustment to new conditions is the price he must pay to stay in the race.

Speaking from the standpoint of business journalism, I know that every editor in our ranks has found that if he is to hold his audience he must be more kinds of an editor than he was before the war. Seeing what the war, the automobile, the radio, the game of golf and the new thirst for amusement have done to the reading time of the average life now being lived, the business paper editor knows well that there must be high propelling power behind his message if he is to lodge it in the thinking of the men to whose business he has devoted himself.

I am sure, also, that every man in a place of responsibility in the steel industry, whether in the making or marketing of the product, has had to pay a higher price for success in these post-war years than was called for in any period since iron and steel making took a leading place in American industry. Every man here, I venture to say, will tell you that he is giving vastly more service and working harder in every way today for a living and a profit than ever in his life. The world upheaval has thrust upon the thinking of every progressive business man today economic, political and social problems, a knowledge of which was considered only the most secondary part of his equipment ten years ago.

So much stress has been put upon the farmer's hardships and in industry upon the unfavorable conditions in textiles, leather, fertilizers, and most of all in coal, that little attention has been given to the fact that out of ten major groups of commodities the metal group has shown in the past six years a closer approach to pre-war prices than any other. Iron and steel did not fall so far as copper, it is true, but in view of their great consumption the reduction in iron and steel products is very largely responsible for the low place in the price scale of the metal group as a whole.

Steel Works Economies

ONE paragraph in the Steel Corporation's report for 1925 compresses into small space what might be made a long story, of what the steel companies have had to do to meet the competitive conditions of these years since the crash of 1920. I refer to the statement that prices received for the corporation's products in 1925 were \$3.80 a ton less than in 1924 on domestic business and \$4.38 a ton less than in 1924 on foreign business. Gross earnings were \$165,000,000 in 1925, or 8 per cent more than in 1924, on a business of 12,340,000 tons of finished material, or 18 per cent more than in 1924. Only by unprecedented economies in production was the showing of 1925 made possible.

Other steel companies found likewise that if they were to make money, a large part of it must come through savings; their problem was even harder, seeing that the Steel Corporation has very considerable profits outside of steel making, its advantage being

estimated at \$3 to \$4 a ton. In the whole industry plant efficiency has been greatly increased. Better labor performance may be a factor—how much of a factor we do not know. What is known is that every steel producer has been forced by active competition to get its costs down.

Meanwhile not a little has been said about the selling methods of the steel companies. It is admitted that efforts to reduce production costs have been much more successful than efforts to get a market price yielding a fair profit. At the May meeting of the American Iron and Steel Institute the president of the Bethlehem Steel Corporation said that the steel trade can be and should be a better merchant. On more than one occasion the president of the Institute has told his fellow-manufacturers that the chief reason for the lack of adequate profit in steel was the attempt of some producers to operate their plants at a higher rate than was warranted by the amount of business in sight.

At times this year it has seemed as though more insistent effort was being made throughout the industry to stabilize prices and that there was more willingness to refuse business that did not yield a profit. It must be said, however, that on the testimony of some steel manufacturers others are still prone to a certain amount of weakness in the presence of attractive tonnage. Also, if steel market reporters are correctly advised, these "others" are inclined to say the same thing about their accusers. On the whole, as earnings statements for 1926 have been showing, the agitation for more successful salesmanship in steel has been bearing fruit.

Widening Steel Consumption

PROBABLY nothing has been more marked in steel trade developments since the war than the extension of the uses of steel into new channels. What is being done in this direction has a direct bearing on the movement for better selling of steel. Increasing the demand tends to solve the problem of excess capacity. At the same time we do not overlook the tendency to overdo the newer lines of steel manufacture. Cold rolled strip steel is a case in point. Andrew Carnegie once said in the early days of his experience in rolling structural steel, when he wanted to warn off other steel companies that were thinking of going into it: "It is a business of infinite detail." That would deter no one now. Every branch of the business today is one of infinite detail. Nobody expects anything else.

The 2,000,000 tons of rails rolled in American mills in 1887 were nearly 75 per cent of the entire output of finished steel. For the past five years the average production of steel rails, at 2,500,000 tons a year, has been just 9 per cent of the average annual production of rolled steel products. It would take a stout volume to tell the story of this increase of over 1000 per cent in total steel output since 1887, while steel rails increased only 25 per cent. The average man is astonished to be told that wire products, many of them the most tenuous forms in which steel exists, now represent a larger annual tonnage than steel rails. Food containers call for more than a million tons of steel a year in the form of tin plate. Railroad, structural and automobile outlets are impressive. A sky-scraper and a Queensboro bridge are spectacular. But the demand for which the bulk of the new capacity of the country

*Address before the Metal Branch, National Hardware Association of the United States. Hotel Ambassador, Atlantic City, Oct. 21.

†Editor THE IRON AGE.

has been built in recent years is rather that which ramifies into hundreds of uses and into thousands of sales to individual buyers.

Great Expansion in Sheets

IN no part of the industry has there been any such post-war expansion, measured by tonnage, as in sheets. And bearing out what was said above of the tendency to rush into new lines of manufacture, no market has seen such ungoverned and at times reckless competition as the sheet market. Demand has doubled since the war—2,100,000 gross tons of black sheets produced in 1919 and 4,100,000 tons in 1925, in addition to 325,000 tons of black plate specialties rolled on tin mills. Yet capacity has kept distressingly in excess of demand.

The sheet industry, however, has been busy making quite another sort of record than that indicated by the price curve. It has outdone every other department of the industry in the development of new outlets for its product. The Sheet Steel Trade Extension Committee in its pamphlet of last year listed more than 650 different articles or classes of products in the manufacture of which sheet steel can be used. Later the committee was advised of 150 additional uses, making a total of 800 articles of common consumption in which sheets are now used or can be used. In their extension work the sheet manufacturers have set an example which producers in other lines may well follow, as some of them are doing.

The American Institute of Steel Construction is doing a high type of work in the interest of steel as a material of construction, and more recently the manufacturers of cold finished steel bars have started a campaign that is very creditably celebrating the achievements and the possibilities of their product.

A Sheet Mill Revolution

CERTAINLY a new spirit of enterprise has come into the sheet steel business. No equal stir and no such forward looking are to be seen in any other department of the industry. Among other things that have had more or less publicity, the Extension Committee's work in behalf of a larger consumption of sheets is easily first. But the putting through of the new sheet steel base and differentials was an achievement of first-class significance, and its good fruits will increase as time passes. Sheet steel simplification and the establishment of the master brand for galvanized sheets are other proofs of vitality as well as of vision and venture.

You men in the trade need not be told that these published activities are not the whole story. They belong largely on the commercial side of the business. But on the operating side research and experiment were never more active. Manufacturers look for great developments in these next few years. So much has been done on the continuous rolling of sheets since the advent of the continuous strip mill that we may not have long to wait for changes in sheet mill practice that may fairly be called revolutionary. Already a 16-gage sheet has been rolled on the heat the ingot had as it left the soaking pit, and that advance fully warrants large expectations.

Remarkable Increase in Strip Steel

In this connection the sheet industry is taking a lively interest in the competition it will have from strip steel produced on continuous mills. We have mentioned the doubling of sheet production since 1919. Hot rolled strips, while of smaller tonnage, increased 140 per cent in the same six years—a production of about 500,000 tons in 1919 and 1,200,000 tons last year. Of this increase of 700,000 tons, 400,000 tons came last year, 1925 showing a gain of no less than 50 per cent over the production of 1924. The use of steel in motor car construction has made a great stride in the past year, and in this field the race between the sheet mill and the strip mill grows more and more interesting. Another development that will bear watching is the use

of sheets in the building of the steel house. Those who move early on this innovation will profit by their foresight.

No question has been more often asked in steel trade comment of recent months than "Where is all the steel going?" The manufacturer who finds the largest outlet for his product in the 45 per cent of the steel consumption of 1925 that was outside of railroad, construction and automobile uses should be best able to give the answer, for it is in this 45 per cent that the expansion of the near future will be greatest.

Hand-to-Mouth Buying

SO much for the rapidly expanding uses of steel. Scarcely less important and certainly much more talked about in the past year and a half has been the great change that has come over the buying habits of the consumers of steel. Hand-to-mouth buying it has generally been called. Conservative buying and requirement buying are other names for it. The new régime it has forced upon the rolling mill is designated as production for consumption, as against production for makers', merchants' and consumers' stocks. So much has been written about it that time need not be taken in such a gathering as this with details of its workings. It is found in every line of manufacture and distribution. Always it is spoken of as literally turning railroad cars into warehouses and as saving the buyer large interest bills for borrowings to carry his inventory. Uniformly there is the comment that but for the remarkably good functioning of the railroads in these best years in their history, short-term buying, such as has been the rule since 1924, would be impossible.

What interests us most is the question: "Will it last?" Is the existing buying practice in the steel trade to be regarded as permanent? A recent canvass by the Farmers' Loan & Trust Co., New York, of manufacturers, merchants, railroad executives, economists and others, showed that a large majority of those replying held the opinion that, with some adjustments, the practice of short-term buying will long continue.

In the steel trade hand-to-mouth buying has solved one problem that for years has plagued producers—that of making contracts binding. The revision of contract prices on a falling market was an abuse that time and again caused serious dislocation, as booms and leanness alternated. In the past year and a half there has been an equalizing of production schedules throughout the year, and a stabilization of prices that have been of benefit to the producer. But much of the hand-to-mouth buying is of a sort that increases the cost of production and distribution. The multiplication of orders involving small lot rollings is expensive to the mills, and they are being called on in many cases for a service that has long been considered a function of the jobber. Thus far the mills have not been able to pass on to the buyer the cost of this service.

On the other hand, those large users of steel who, under the old régime, bought heavily just before the market entered upon one of its upswings, and who depended for no small share of their profits on their foresight in buying, have chafed not a little under the lockstep markets we have been having in the past two years.

It would be assuming a good deal to say that forward buying of steel has gone by, never to return. Without doubt the belief that a long period of declining prices would follow the Great War, and that advances would be exceptional and temporary, has had much to do with starting the habit of buying for near-by requirements. Steel capacity has been and still is in excess of the demand. But the day may come, as it came after the depression of the eighteen-nineties, when the country will wake up to find existing plant unequal to the demand upon it. Then the buyer will seek to buy for some months ahead, as he did in other like periods, and prices will advance as consumers seek to make sure of having a full supply of steel as needed.

It may be said, however, there is no likelihood of any repetition of the old-time upswings for many months.

Growing Steel Imports

THE growing volume of iron and steel imports to the United States has attracted much attention in the past year. Compared with the domestic production they are not significant, the imports of semi-finished and finished steel in the first eight months of the year being about 1.25 per cent of the total. But on the Pacific Coast, in the southwestern districts tributary to Gulf ports, and at certain Atlantic ports the competition of foreign bars and structural shapes has been a factor constantly to be reckoned with, nearly 150,000 tons of these two products coming in in the first eight months of this year. In the same period the total of rails and splice bars was 43,000 tons. Apart from those just mentioned, miscellaneous steel products imported in the first eight months were about 85,000 tons. Pig iron was 377,000 tons, scrap 48,000 tons and cast iron pipe 47,000 tons. The total of pig iron and all forms of iron and steel was 786,000 tons for the eight months against 616,000 tons in the like period of 1925.

Today the steel makers of Continental Europe are going after business in this country in earnest. Some of them are getting into this market mainly because of debased currencies, yet Germany with its gold par reichsmark is making its competition increasingly felt. In some cases quoted prices are far below those of domestic mills. Such very deep cuts are apparently made to overcome the scruples of American buyers against bringing in foreign steel. The fact that they yield little or no profit to the foreign seller is reason for the belief that these extreme concessions will not long continue.

More European Steel to Come In

Lately the formation of the syndicate of German, French, Belgian and Luxemburg steel works has caused widespread discussion of its effect on the American steel market. Its first effect on the European market was an advance in finished steel prices ranging from 10 to 15 shillings, the advances applying also to exports. These higher prices have led to predictions in some quarters that the American market will get less foreign steel hereafter. That does not follow. Seeing that on some forms of import steel domestic prices have been cut \$10 a ton and more, there is still a considerable margin for importers to work on. So far as steel rails are concerned, it is probable that the European agreement, to which Great Britain is a party, will put an end to the invasion of this market. On other steel products a steady inflow from Europe is to be expected, even though it be no considerable percentage of our total consumption. In the past European steel cartels have invariably aimed at the maintenance of prices in their home markets so as to permit the concessions necessary to secure a maximum business in the markets of the world. No reason has appeared thus far for expecting a different policy in the operation of the cartel just formed.

An interesting phase of this combination of the steel producers of western Europe is the fact that some of the leading German units have been rehabilitated by American money. No less than \$100,000,000 of securities of European steel companies have been marketed in this country, far the larger part of the proceeds going to Germany. The domestic holder of bonds or stocks of these German steel companies has behind his security the German Government's free grant to industrial corporations to combine for the purpose of maintaining prices at home and of marketing a maximum proportion of their product at lower prices in the markets of the world. He can read with a certain degree of complacency of increasing importations of German steel on our Atlantic and Pacific seaboard and at Gulf ports, knowing that the lack of profit to his company on such business will be more than made up by profitable tonnage sold at agreed prices in Continental markets. Not academic but highly practical is the interest of such an American in the workings of European cartels. In his capacity as an American

business man, should he be so engaged, he is forbidden to participate in any trade agreement. As a stockholder in a European steel company he enjoys a full share in the benefits of practices on which his country has put the ban of the criminal code.

It is not surprising, in view of the amount of pig iron and steel European makers have sent to this country, even under the disorganized conditions that have prevailed yonder in the past two years, that there is serious questioning as to the effect of the new combination on the American market. Having arranged to abstain from low-price invasions of their respective territories, we may expect that the associated European makers will try to send more rather than less steel to this, the best market in the world in which to sell their product.

Further American Steel Consolidations

IF the European steel cartel succeeds to the extent that its promoters expect and becomes a permanent factor in international trade, what change may be looked for in the organization of the steel industry of the United States? It will be recalled that the majority decision of the Supreme Court in the Steel Corporation dissolution suit hinged largely on the corporation's claim that only by the economies made possible by integration on a large scale and by the diversity of products it could offer would it be able to compete successfully in the markets of the world. This new union of European steel producers for the taking of a larger share of export trade is even a stronger argument for further integration in the American steel industry than was furnished by conditions existing when the Steel Corporation was formed.

Much has been said against the anomaly of countries with no steel industry getting most of their steel at less than is paid by the peoples making the steel. The day may come when non-producing countries will pay a fair price for this most essential of all the products of the mechanic arts. But meanwhile we have a condition rather than a theory. The steel industry of the United States will not be satisfied with a smaller share of world trade. Producing today 60 per cent of the world's steel, it can only look forward to a larger outlet in the export trade. Under competitive conditions in the domestic trade, the problem of a fair profit for the ordinary producer is harder every year. Thus conditions at home and abroad are working for further steel trade consolidations in the United States as a means to still greater economies in production and distribution. In this direction the developments of the next five years, if not epoch making, will be of high importance.

Promote Engineering Foundation

Promoting the cause of Engineering Foundation and its service as a joint engineering research organization was the purpose of a dinner given at the Hotel Statler, Detroit, Oct. 4, by the Associated Technical Societies of Detroit. Elmer A. Sperry, of Engineering Foundation, was the principal speaker, dwelling largely upon the general benefits of applied science research. Other speakers were Alfred D. Flinn, director of the foundation; Dr. Charles F. Kettering, president of the General Motors Research Corporation, and Captain Harrington Place, chairman of the Associated Technical Societies of Detroit. Ambrose Swasey, Warner & Swasey Co., Cleveland, founder of Engineering Foundation, was the honor guest of the evening, and closed the session with a short appreciation of scientific achievement in the world.

Large Consumption of Babbitt Metal

WASHINGTON, Oct. 26.—The apparent consumption of babbitt metal in September, based on reports received by the Department of Commerce from 27 firms, was 5,337,032 lb., as compared with 4,986,825 in August and 4,621,033 in September, 1925.

Ohio Commission Suspends Advances in Pig Iron Rates

CLEVELAND, Oct. 26.—The Ohio Public Utilities Commission has suspended for 30 days the proposed advances in freight rates on pig iron in Ohio that were contained in new tariffs recently issued by the railroads of the Central Freight Association to become effective Nov. 1. The new tariffs were prepared as readjustments of the present rates. However, the readjustments are mainly upward. Where reductions are made, these are quite small. As the suspension applies only to the rates that are advanced, the reduction made in intrastate rates in Ohio will become effective Nov. 1.

Protests against all the interstate tariff readjustments on pig iron in the States of the Central Freight Association which the railroads were to place in effect Nov. 1 have been filed with the Interstate Commerce Commission, which has not yet acted on these protests.

One of the most important changes that were proposed in the Ohio pig iron rates was an advance of the rate of \$1.26 from Cleveland to Akron and Canton and from some of the Valley furnaces to Canton, to \$1.65. Under the new Ohio tariffs the rate from Jackson to Cleveland is reduced from \$3.02 to \$3.

Holds Rates on Virginia Pig Iron Are Reasonable

WASHINGTON, Oct. 26.—In a tentative report made public yesterday Examiner John McChord recommended that the Interstate Commerce Commission dismiss the complaint of the Virginia Pig Iron Association against rail rates on pig iron from Virginia furnaces to points in Maryland, Pennsylvania, Delaware, New Jersey, New York and New England. The examiner held that the rates are not unreasonable.

Carborundum Co. to Sell Fitch Recuperator

The Refractory Division of the Carborundum Co., at Perth Amboy, N. J., manufacturer of carborundum refractory products, announces that it has been licensed to sell the Fitch recuperator, and that W. H. Fitch, formerly manager of the metallurgical department of the Fuller-Lehigh Co., is now associated with the Car-

borundum Co. The recuperator principle is applied to reversing reheating furnaces to take the place of several checker changers. Open-hearth furnaces, when equipped with the recuperator operated in conjunction with checker work, show, it is stated, greatly reduced temperatures in the waste gases entering the stack.

Parkesburg Iron Co. to Close Its Plant

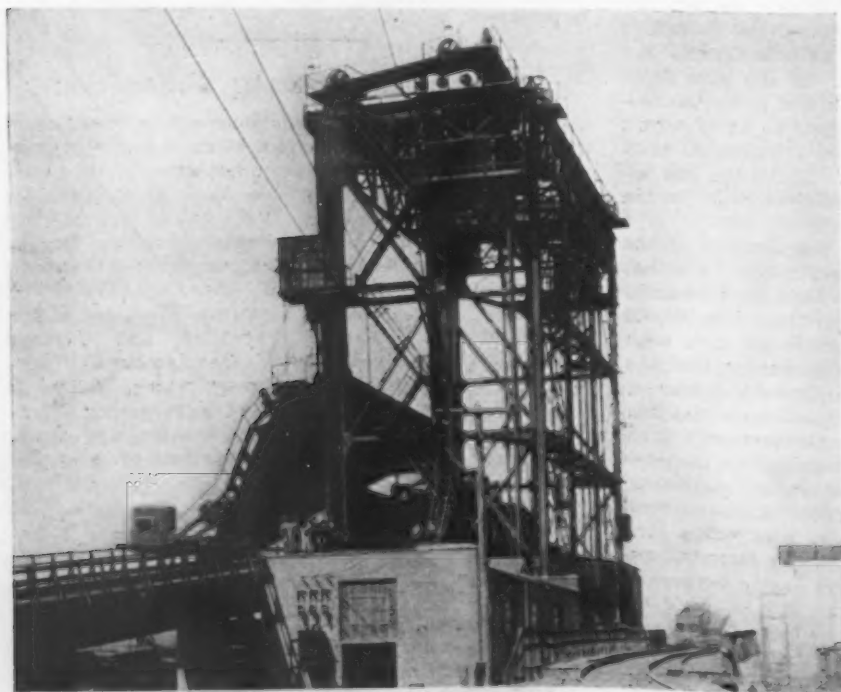
In pursuance of certain plans for the diversification of its products and changes in and additions to its facilities, the Parkesburg Iron Co., Parkesburg, Pa., will temporarily suspend the manufacture of charcoal iron boiler tubes. In the near future the company hopes to announce the resumption of the production of these tubes, as well as new products. Since its inception more than 50 years ago, the Parkesburg company has devoted its facilities exclusively to the manufacture of charcoal iron boiler tubes and skelp.

Will Build Large Ore Boat

A contract for a 630-ft. freighter, which will be the largest ore boat on the Great Lakes, has been placed by the Interlake Steamship Co., Cleveland, with the American Shipbuilding Co. This will be built at the Lorain, Ohio, yards. The boat will have a 65-ft. beam and will be 33 ft. deep. With a draft of 20 ft., it will carry 13,800 gross tons. The largest boats now operating in the Lake Superior ore trade are 617 ft. in length. This is the fifth large freight boat that has been ordered during the past year by the Interlake Steamship Co., which is managed by Pickands, Mather & Co. They will replace vessels of a smaller size that have been sold.

Ship 350,277 Steel Barrels in September

Members of the Steel Barrel Manufacturers Association, Cleveland, did a business totaling \$1,297,421 in September. Shipments totaled 350,277 barrels, and unfilled orders at the first of the month amounted to 844,023 barrels. Of a total daily productive capacity of 31,950 barrels, 43.8 per cent was used in September. Of an average daily capacity of 6675 I.C.C. barrels, 43.3 per cent was used, while out of an average daily capacity of 25,275 light barrels, 44 per cent was employed.



AN electric car dumper of 120-ton capacity has recently been installed on the docks of the New York Central Railroad at Toledo, Ohio, by the Wellman-Seaver-Morgan Co., Cleveland. The Toledo installation has some features which depart from past practice in lifting car dumper construction. The dumper was placed in operation April 1, this year, and by Aug. 1 had handled approximately 2,225,000 tons of coal, which is said to be a record performance.

DISCUSS SHEET STEEL TRADE

Jobbers Consider Recent Changes in Roofing and Other Products

In connection with the thirty-second annual convention of the National Hardware Association its Metal Branch held its annual meeting at the Hotel Ambassador, Atlantic City, on Thursday afternoon, Oct. 21. The sessions of the National Hardware Association were scattered over five days, beginning on Monday, Oct. 18. They were presided over, for the most part, by President W. H. Donlevy, of Carter, Donlevy & Co., Philadelphia. Mr. Donlevy also presided at the meeting of the Metal Branch, which was attended by many jobbers in the sheet, tin plate and roofing trades, and by representatives of sheet and tin plate manufacturing companies.

President Donlevy, in reviewing the developments of the year, referred particularly to the recent substitution of No. 24 gage for No. 28 gage as the base for black and galvanized sheets. In connection with the simplification movement he said that 29 gage pipe and gutter had apparently disappeared entirely and that manufacturers of elbows had announced the discontinuance of the production of No. 29 gage galvanized steel elbows and also 14-oz. copper elbows. He spoke in commendation of the campaign of the Sheet Steel Trade Extension Committee.

Sheet Mill Order Books

Representatives of the sheet manufacturers were called on to speak of trade conditions. Walter C. Carroll, Inland Steel Co., Chicago, said that large concerns that once carried a 90-day stock of sheets are now running on a three weeks' margin and it would not take long for an increased demand to wipe out these stocks. He believed a condition of this sort, with attending scarcity, might develop in the next 90 days on galvanized sheets. L. D. Brueckel, Weirton Steel Co., Weirton, W. Va., was of the opinion that a shortage of sheets might be seen in the next 60 or 90 days. The demand is insistent and it appears that sheets are going into consumption and not into stock. L. D. Mercer, of the Central Alloy Steel Corporation, Massillon, Ohio, said that while business is good and is likely to continue so, he did not look for any shortage in the remainder of the year. He rather believed that sheet manufacturers would be looking for orders in December. Messrs. Follansbee and Sommers expressed the view that there would be no shortage of sheets in 1926.

L. D. Mercer led the discussion on the topic, "The New Sheet Steel Base and Differentials." A prime reason for the change, he said, was that there had been too much profit on some gages, not enough on others and none at all on still others, these conditions being accentuated in the case of galvanized sheets as the price of zinc advanced. The aim of the new differentials was to give approximately the same percentage of profit on all gages. He believed the new differentials on galvanized sheets were not all they should have been and there was reason to hope that further changes would be made in these. On the whole, the reception of the new schedules was gratifying and they had proved to be a decided step in advance. While not satisfactory to all members of the trade, jobbers and manufacturers had been disposed to make the best of the situation and the wisdom of the changes would be better appreciated as time goes on.

The Simplification Movement

Walter C. Carroll, chairman of the Sheet Steel Simplification Board of Review, approved of the flat portion of the simplification schedule. The tendency has been away from the lighter gages. He judged there had been a gain of 5 per cent in the direction of the heavier gage, No. 26. He recommended further agitation and publicity and suggested that a complete survey of the industry be made, covering the first half of 1927, to find out exactly what the tendency is. The Department of Commerce has offered its services in conducting such a survey. Mr. Carroll reported that

the mills will have the largest business in sheet steel roofing in 1926 that they have had for many years.

L. D. Brueckel, chairman of the Terne Plate Simplification Board of Review, referred to the proposals now pending which would eliminate 25-lb. and 30-lb. ternes. He believed manufacturers should be more thoroughly canvassed to learn their attitude toward the proposed eliminations. The question to be answered was whether further simplification would be good for the industry. On Mr. Brueckel's motion the Department of Commerce was asked to conduct a questionnaire to determine the weights of ternes produced in 1926 and what coatings it would be desirable to remove from the list as it now stands.

Sheet Steel Extension Campaign

Secretary C. L. Patterson, of Pittsburgh, gave a thorough resume of the work and plans of the Sheet Steel Trade Extension Committee. The aims of this work were thus summarized by the speaker:

First and fundamentally, to regain lost markets, broaden existing markets and develop new markets for sheet steel, leveling so far as possible the peaks and valleys of production which have been characteristic of our industry for several years past.

Second, to educate the component parts of the industry—the manufacturer, the distributor and the fabricator, as to the possibilities of merchandising the product in which we are all mutually interested, and to unite our efforts toward breaking down sales resistance.

Third, to encourage these different branches of the industry to help themselves by creating a new interest and confidence in their business and its possibilities.

Fourth, to break down the prejudice existing in the minds of the consuming public against certain products fabricated from sheet steel.

Fifth, to educate further the consuming public as to the utility, strength, safety and beauty of sheet steel, and its adaptability to unfamiliar uses.

A feature of the campaign is educational work in the vocational, manual training and technical schools of the country. The Building Trades Extension Department has been a recent development and has proved to be one of the most important of the committee's activities. A number of investigations have been carried on in the building trades with a view to removing prejudice and getting consideration for the facts concerning sheet steel. Closer relations have been established with the sheet metal contractor. Manufacturers of other materials have for years promoted campaigns for the education of architects and builders, while the merits of sheet steel have not been properly presented. As a result of its advertising, the committee has received nearly 1,000,000 inquiries from consumers. The speaker gave figures showing sustained demand for sheets in the period in which trade extension work had been actively carried on.

Malleable Casting Production Held Up in September

WASHINGTON, Oct. 26.—Production of malleable castings in September totaled 58,376 net tons, as against 57,541 tons in August, according to reports to the Department of Commerce from 139 identical plants. A number of plants have been unable to report orders. The production of such plants in September of the present year was 4623 tons, while in 1925 it was 41,983 tons. Shipments in September amounted to 54,635 tons and orders booked, 47,130 tons. The September rate of operation was 53.7 per cent, the monthly capacity being 108,627 tons.

Good Shipments of Steel Furniture

WASHINGTON, Oct. 26.—Shipments in September of steel furniture stock goods, as reported to the Department of Commerce by 23 manufacturers in the "business group" were \$2,449,906 as compared with \$2,342,615 in August. September shipments of shelving, reported by 16 companies, were \$588,096 as compared with \$545,901 in August.

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Labor's Five-day Week

IT is not hard to understand the American Federation of Labor's declaration for a five-day week, accompanied as it is by the significant qualification "at no corresponding curtailment of the weekly wage." The labor leaders are salesmen, which is not a derogatory characterization, for in human life most of us are in reality salesmen whether or not we think of ourselves in that way. The labor leaders aim to sell more and more advantageously labor in the mass. If unsuccessful in that their *raison d'être* would be nil. The main difference between organized labor and the medical profession, let us say, in selling services is that the former occasionally includes the use of brickbats among its arguments.

Mr. Green and his advisers are men of intelligence, and as such are perfectly aware that 45 million American workers cannot make the same produce in 250 days of annual work that they can in 300. The anthracite miners, for example, who work only a few more than 250 days a year, as it is, would manifestly by working 300 days produce more coal, which would be highly desirable. The program of the American Federation of Labor does not envisage production at all. It is simply concerned with selling five days of labor for the present pay of six days. If the production of a sixth day be needed, it can be had for 10 per cent to 20 per cent more pay, which, of course, is to come from the 90 per cent of labor that is unorganized, there being no other source whence it might come.

As a selling argument for this aspiration there is appeal talk in respect to the fatigue of labor, the raveling of nerves by constant exposure to whirling machinery, the ability to produce more in few hours than many, etc. It might almost be thought that it would be desirable for the world to revert to the conditions of labor previous to the advent of the steam engine and adopt the scale of living of, let us say, the Chinese.

As we do things in our modern industrialism the hours of labor are reasonably well adjusted to the severity of the requirements. It would be a stupid

manager who would deliberately impair the efficiency of his costly plant and spoil the quality of its work by overtaxing his men. The road-mender who works 10 hours per day, or perhaps only eight, does not handle many tons of material and does not expend an extravagant number of calories of energy. A good shoveler unloading a gondola car may throw out 25 tons of coal in eight hours. The charger of a zinc distilling furnace works only a four-hour day during which he handles about 10 tons of material in a difficult way, but he actually expends energy for only a small fraction of the time, during which his performance is enormous. In labor as in pure physics the same natural laws prevail.

Judge Gary, on the occasion of his 80th birthday, expressed common sense when he said, "I know I can't do as much work in five days as I can in six and I don't think anyone else can." The judge has never exhibited any aversion to work. We do not think that Americans as a whole have any aversion to earning their living or any desire to enjoy more leisure for games and amusements than they do now. Restriction to five days at the existing daily wage or the current unit prices for piece-work would be unwelcome to most workers; but five days of work at the wages now paid for six days, with freedom to work the sixth day at the same rate, or at overtime rate, is a different matter.

SCIENTISTS and others were electrified by the account in the daily press last week of the production of electrons in countless numbers outside of a newly developed Coolidge tube. Certain of the effects produced on various forms of matter by the bombardment of these rays were fantastic and almost unbelievable. Some day they may prove of unusual practical benefit. One important useful effect may be expected—more powerful X-rays. At present the use of these rays in the examination of metals or hidden defects is limited because of their restricted power. Metal three inches thick represents the limit of penetrability. The new tube may make possible the penetration of much thicker

and denser material and reveal defects not now discoverable, or at least make detection quicker and easier. It should permit of bringing X-rays closer to the object to be examined, and simplifying the procedure necessary with present facilities. It is reasonable to expect, therefore, that some day our knowledge of defects in rails and other important material will be measurably increased as a result of the new development.

Manganese in Open-Hearth Work

NEW emphasis was put on the use of manganese in open-hearth steel practice in one of the American Iron and Steel Institute discussions last week. It was shown that in present practice both high- and low-manganese pig iron may be included in the charge, as well as manganese-bearing ores of various kinds. Either the pig iron or the ores will insure the presence of manganese in the bath. Both methods are being employed with success.

It is now well demonstrated that the effect of manganese is primarily to produce a better steel. It tends to eliminate sulphur as well as to reduce oxidation. Further, it is now proved that there is enough residual manganese in the steel to effect a ferromanganese saving of sizable proportions. Other benefits recently demonstrated are a smaller requirement of lime and fluorspar and an increased output of steel. These results have been secured from manganese-bearing pig irons, but, as said above, they can be had also by charging manganiferous ores.

The call for quality steel in quantity is in the way of being answered through the wider adoption of this manganese practice. Some of the earlier drawbacks in making manganese-bearing pig irons and using them in the open-hearth furnace have been overcome. An advantage that will be more marked as time passes is the outlet that will be made for our large supplies of manganiferous ores, not to mention the saving in ferromanganese, an item of large economic and strategic importance.

Strong Spots in Coal

IN the past two or three weeks there has been what some market reports call a "scramble" for the coal of certain districts, and prices have been advancing sharply. The only cause assigned for the condition is demand for export to Great Britain. Many have been asking the question how the coal market could be so altered when for several years there has been much talk about "too many coal mines and too many coal miners," and when the production of bituminous coal as reported weekly is below high rates attained on various occasions in the past without there being any exhibition of strain.

The answer is in brief that there are simply strong spots in coal. Only a few markets have been affected, though in these there are cases of double the prices of the early summer. The demand for export to Great Britain is a very discriminating one, only coal of certain grade and of high quality being called for. This explains why there can be such strong bidding for some coal, while markets in general have risen but little, and why some districts cannot produce as much as they wish

while others have mining capacity and men to spare.

As a quantitative measure, September exports through Atlantic ports were 2,769,253 net tons, against 383,947 tons in September, 1925, bunker coal amounting to 862,785 tons against 457,089 tons. The increase in the two is 2,783,000 tons, and that is 5.4 per cent of the total production of bituminous coal in September—48,976,000 tons. What may be called the extra demand is almost insignificant, relative to the country's production, but it is confined very largely to a few fields.

As to the rise in prices, it is notable that it has not gone on steadily since this export demand became important. At first there was very little advance, while of late there have been advances almost from day to day. Generally speaking, at the outset only the lowest cost mines in the fields involved were working. As buying increased, the operators were glad to see additional coal and secure a heavier operation, reducing their costs. After a time the low cost mines became fully engaged, and then for a further increase in supply higher cost mines were brought in, mines that had higher costs on account of physical conditions and mines with higher costs on account of employing union labor.

The export demand is chiefly in high grade gas coal. It is notable that of the quarter million or thereabouts of British miners who have gone back to work (out of a total of somewhat over a million) nearly all are at mines producing the lower grades. Miners in the highest grade districts have been holding out firmly.

With greatly advanced prices in some fields, chiefly West Virginia and western Pennsylvania, and prices elsewhere up but little or not at all, there is opportunity for domestic demand to shift its sources by paying extra freight and patronizing fields where coal is still cheap. The present case is quite different from that presented on other occasions, when coal became scarce all over the country. Then there will be the influence of lake shipments suddenly coming to an end. Heavier consumption in winter tends to balance that change in the long run, but there will be some influence.

The Fiat Wage Program

WHO or what determines the hours and wages of labor? This question has been ignored in much of the discussion of the five-day week. It is too commonly assumed that the size of a workman's pay envelope and the number of his hours of service can be fixed by the mere fiat of the employer, on the one hand, or the dictation of labor on the other. Much time is being wasted arguing the supposed benefits or demerits of given working hours or wages, as if they could be decided without regard to actual economic possibilities.

The limitations on the employer in dealing with the wage problem were well outlined in a recent address by Charles Piez, chairman Link-Belt Co., Chicago. He said:

Though the employer owns the shop and equipment, though he controls the management and the policy, though he exercises the right of hiring and firing, in the final analysis his responsibility consists of finding a market in which he can dis-

pose of the labor of his workers. That being the case, the price he fixes for a unit of labor cannot be satisfactory to the worker alone; it must be satisfactory to the purchaser as well. . . . Even when the workers are organized and fix the rates of wages through the economic strength of their organizations, the purchasers still have the final decision as to whether the rates shall be paid or not, for if the rates raise the price of commodities unduly, demand lessens and an adjustment acceptable to the purchaser becomes necessary. . . . The employer's attitude toward wages, therefore, is a compromise between the expectations of the workers and the willingness of the purchaser to pay.

The relation between the cost of labor and the price of labor's product was brought out by a recent change in the working hours of Japanese electrical workers. According to a Tokio dispatch to the Associated Press, the employees of the Hiroshima Electric Works, which had been having bad business, are now working an additional hour a day at unchanged daily wages. Meanwhile the company's business is said to be improving.

The futility of academic consideration of hours and wages is illustrated again by the statement of a German foundryman who attended the recent international convention at Detroit. When asked whether the 8-hour day was still in vogue in Germany, he replied that most industries had been on a part-time basis for so long that employees are anxious to work as many hours as they are permitted.

It is evident that neither employer nor union can deal rightly with the question of wages, hours per day, or days per week without due regard for the whole economic structure. What the unions sought in the steel strike of 1919 and what they

now aim at in the movement at Detroit is such control of industry as shall exempt their members from the operation of the forces which determine commodity prices and the earnings of capital. Their aim has been to have the brunt of these limiting forces borne by the owners of the instruments of production.

Under the modern régime of large corporations, these owners are the thousands of men and women, many of them workers, who have investments in industry. To all such the prospect of outside labor union control can only mean diminishing returns while the union secures such disproportionate wages as workers in the building trades, in coal mines and on the railroads have long enjoyed largely at the expense of the rest of the public.

ONE of the most significant features of the technical program of the recent foundrymen's convention at Detroit was the symposium on permanent or long-life molds as reviewed in our issue of Oct. 7. Six papers were presented, recounting developments in this and other countries. A great advance has been made in the production of many forms of castings, particularly gray iron, without sand. The most familiar example is centrifugally made iron pipe, and the method has been extended to carbureters and other castings. A denser, better product is usually secured by this process and the quantity producible has been much increased. The initial outlay for materials and apparatus is large, but the advantages, including the elimination of the sand problem, are more than an offset. While the day of making castings without sand has not arrived, it may be rapidly approaching.

To Push Waste Elimination Through Trade Associations

WASHINGTON, Oct. 26.—Pursuing its policy of establishing close contact with trade associations in the metal-using industries, the National Committee on



R. L. LOCKWOOD

Metals Utilization had added to its executive staff R. L. Lockwood, whose duty it will be to correlate the waste elimination programs of the various trade associations in these industries. Where such organizations do not exist, it is proposed to have them set up. The immediate purpose is to have the trade association committees study the problem of waste elimination, reconcile their necessarily limited point of view with the general situation and furnish to the office of the national committee suggestions and recommendations which will facilitate the coordination of all elements in the matter of applying corrective measures.

Mr. Lockwood will analyze the material submitted and from it determine upon a plan upon which can be established a unified program for waste elimination.

Mr. Lockwood until recently was in the New York office of the engineering staff of the Brown Hoisting Machinery Co., Cleveland. His training largely has been along engineering lines but mostly in connection with their commercial features. Mr. Lockwood is a graduate of the Case School of Applied Science.

Foundry Equipment Bookings Gain—Shipments Decline

September sales of members of the Foundry Equipment Manufacturers' Association, Cleveland, totaled \$400,464, a gain of 16 per cent compared with the total of \$343,351 reported for the corresponding month of last year and a gain of 2 per cent over the \$391,935 for August, 1926. September shipments showed a loss of 1½ per cent compared with those of August and a loss of 0.02 per cent compared with the total for September, 1925. Orders on hand Oct. 1 totaled \$522,273, or a gain of 23 per cent over the total as of Sept. 1.

Bureau of Standards 25 Years Old

The Bureau of Standards of the Department of Commerce will observe the twenty-fifth anniversary of its founding on Dec. 4 with a banquet and an open house. An opportunity will be offered for inspecting the experimental research facilities of the Bureau, and the staff will meet with its friends for a general discussion of present and future work.

STEEL DIRECT FROM ORE

Steel Corporation Building Plant at Lorain, Using Hornsey Process

At the Lorain, Ohio, works of the National Tube Co. a new plant is under construction in which iron will be produced direct from the ore without the use of a blast furnace. The Hornsey process, which was extensively tried out in England, as referred to in THE IRON AGE some time ago, and which has been developed under further experimentation in this country, will be employed. The company controlling the new direct process is the Granular Iron Corporation, in which the inventor and Harold Wills of the Wills-Sainte Claire Motor Co. are interested. The Steel Corporation has been licensed to use the process and some of the equipment for the Lorain plant has been ordered. It

is expected that operation will start next year.

Briefly, the process calls for the crushing of the ores, after which they are charged with coal into a rotary kiln heated to a definite temperature. The fine material then passes into a second kiln heated to a higher temperature, and thence to a third kiln where it is subjected to sudden chilling. The next step is to pass the material over magnetic separating rolls. It is said that in the experiments made in England there was a surprisingly high recovery of metallic iron. Because there is no calcining of the ore as it passes through the rotary kilns, the material emerges in a granular form and of practically the same size as when it entered the first kiln. The result is iron in the granular form. It is understood that some of the details of handling this material for charging in open-hearth or electric furnaces are yet to be worked out.

FABRICATED STRUCTURAL STEEL

Awards and Inquiries Increase—More Than 33,000 Tons of New Inquiry

Awards of fabricated steel totaling close to 23,000 tons marked a considerable advance from the previous week's total, although smaller than many of the active weeks of the year. One of the largest lettings was 5900 tons for syphons in southern California. New inquiry called for more than 33,000 tons. Among the pending projects are bridges in Allegheny County, Pa., requiring 7225 tons.

INDIAN ORCHARD, MASS., 400 tons, machine shop, Chapman Bell Mfg. Co., to American Bridge Co.

NEW YORK, 3075 tons in the following jobs reported to the Structural Steel Board of Trade: Addition to factory, American Can Co., Brooklyn, to Post & McCord; 16-story apartment hotel, 150-154 East Fifth Street, to Hay Foundry & Iron Works; 16-story apartment building, Ninety-first Street and West End Avenue, to A. E. Norton, Inc.; apartment building, 57-59 Superior Avenue, Jersey City, apartment building, 375 Mount Prospect Avenue, Newark, and factory building, Spencer Kellogg & Sons, Edgewater, N. J., to Shoemaker Bridge Co.

NEW YORK, 1200 tons, apartment building, 21-33 West Ninety-sixth Street, to Drier Iron Works.

NEW YORK, 1100 tons, apartment building, 21-35 East Seventy-seventh Street, to Easton Structural Steel Co.

NEW YORK, 2000 tons, Harlem River bridge, to McClintic-Marshall Co.

BROOKLYN, 725 tons, Masonic Temple, to Easton Structural Steel Co.

BROOKLYN, 680 tons, warehouse, St. Johns Place, to Joseph Gaydica Iron Works.

JERSEY CITY, 550 tons, ice plant, Erie Railroad Terminal, to Belmont Iron Works.

BALTIMORE, 250 tons, viaduct, Western Maryland Railroad, to Bethlehem Steel Construction Co.

NORFOLK, VA., 900 tons, extension to power plant, to American Bridge Co.

ADRIAN, MICH., 150 tons, five deck girder spans for the Wabash Railway, to American Bridge Co.

DETROIT, 400 tons, hangar for the Air Craft Development Corporation, to Continental Bridge Co.

AKRON, OHIO, 500 tons, factory building for Firestone Tire & Rubber Co., to Berger Iron Works.

CINCINNATI, 500 tons, buildings for E. Kahn & Sons, to William Lang & Sons Co., Cincinnati.

CHICAGO, 600 tons, building for the North Shore Sanitary District, to Continental Bridge Co.

CHICAGO, 150 tons, Christian Science Church to Rutter Brothers, Chicago.

PARIS, ILL., 240 tons, Elks Lodge, to Mississippi Valley Structural Steel Co.

EVANSTON, ILL., 175 tons, junior high school, to Milwaukee Bridge Co.

ST. LOUIS, 100 tons, building for the International Harvester Co., to Mississippi Valley Structural Steel Co.

MILWAUKEE, 200 tons, Tripoli Temple Shrine Mosque, to Milwaukee Bridge Co.

ADEL, WIS., 100 tons, addition for Welland Dairy Co., to Milwaukee Bridge Co.

PITTSBURG, CAL., 160 tons, building for Pioneer Rubber Co., to Judson Mfg. Co., San Francisco.

ORLAND, CAL., 220 tons, gates for the Stony Gorge dam for the United States Reclamation Bureau, to Western Pipe & Steel Co., San Francisco.

HOLLYWOOD, 450 tons, Warner Brothers theater, to Pacific Rolling Mill Co., San Francisco.

LOS ANGELES, 163 tons, specification P-394 for the water and power commission, to Baker Iron Works.

LOS ANGELES, 5900 tons, syphons for the Southern California Edison Co., awarded as follows: 3500 tons to Western Pipe & Steel Co., and 1200 tons each to Lacy Mfg. Co., and Llewellyn Iron Works.

LOS ANGELES, 1850 tons, penstock required under specification P-396, to Western Pipe & Steel Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

WILLIAMSTOWN, MASS., 400 tons, addition to Williams College gymnasium.

SOMERVILLE, MASS., 300 tons, First National Stores warehouse.

WORCESTER, MASS., 200 tons, Boston & Albany Railroad roundhouse.

NEW YORK, 1500 tons, addition to Lenox Avenue Shops, Interborough Rapid Transit Co.

NEW YORK, 500 tons, public school, Bronx.

BROOKLYN, 800 tons, Fox Theater.

JERSEY CITY, 550 tons, approach to Erie Railroad refrigeration warehouse.

PHILADELPHIA, 450 tons, House of Correction.

WILMINGTON, DEL., bascule bridge, 1000 tons; bids opened in about a month.

SCRANTON, PA., 500 tons, Wheel machine shop.

INDIANAPOLIS, 475 tons, superstructure for Indiana War Memorial; general contract to Hunkin-Conkey Construction Co., Cleveland.

PITTSBURGH, 7225 tons, Allegheny County bridges over Monongahela River between McKeesport and Duquesne, Pa. (6900 tons), and Guyasuta bridge (325 tons); American Bridge Co. low bidder.

CHICAGO, 3000 tons, central police station and court building.

CHICAGO, 1000 tons, addition to National League baseball grandstand.

MADISON, WIS., 900 tons, Capitol Theater.

RACINE, WIS., 600 tons, Rialto Theater.

BURKSBURNETT, TEX., 750 tons, bridge.

SPOKANE, WASH., 1200 tons, pipe line for the Lake Chelan project of the Washington Water Power Co.; bids in.

YAKIMA, WASH., 6000 to 10,000 tons, 15 miles of pipe line; bids to be called soon.

LOS ANGELES, 620 tons, two 80,000-bbl. tanks for the Associated Oil Co.; bids in.

BURLINGAME, CAL., 100 tons, Masonic Temple; bids Nov. 1.

SAN FRANCISCO, 125 tons, apartment building, Bush and Jones Streets.

SEATTLE, WASH., 1800 tons, Paramount Theater.

VANCOUVER, B. C., 1100 tons, pipe line; bids being taken.

Construction was begun Oct. 1 on the new administration building of the Ohio Brass Co., Mansfield, Ohio, which will house the general offices of the company. Ample space will be provided for the officers and general sales officials, and there will be a general display room on the top floor. A conference room, seating 350, will also be located on the fifth floor designed for sales meetings and other company activities.

Iron and Steel Markets

Further Recession in Steel Demand

Operations at a Lower Rate Looked for in November—
Test on Bar Prices Still Postponed—Excited
Rise in Fuel Has Little Bearing on Steel

FURTHER slowing down in new demand for steel products is reported this week. While still connected chiefly with the curtailment at automobile plants, which has brought a good many of them to a 50 per cent operation, it is affecting the structural industry more than in recent weeks and is causing consumers in other lines to limit their buying more strictly.

More clearly than could be seen at the opening of October, it now appears that much of the business taken in August and September will carry some of the consuming industries through November. Thus, order books are not likely to make so good a showing next month as in October, while steel works schedules will come nearer to those of today, seeing that consumption is holding up better than new buying.

The Steel Corporation ingot production this week is at 83 per cent and its pig iron production at 69 per cent, neither greatly changed, but further reduction in ingots is probable in November.

Leading independent companies are averaging close to 78 per cent in ingots, with the prospect of 75 per cent or slightly less in the near future. In fact, Youngstown producers are at 75 per cent this week.

Steel Corporation earnings for the third quarter were surprisingly high, at \$52,626,000, being the best since the second quarter of 1918. The output was evidently higher than for any peace-time quarter, and in addition to large earnings of ore roads, there was an excellent showing in cement.

Alongside of the growing quietness in steel is the spectacular activity in the coal market, with price advances that have extended to coke and that may yet affect merchant pig iron. But as few steel producers buy pig iron and fewer buy coke, the excitement in fuel is as yet quite without bearing on the steel situation.

Further, coal exports are less than 10 per cent of domestic production and chiefly of high grade gas coal.

Spot furnace coke has sold this week at \$4.50 at ovens, and \$5 is asked for first quarter, whereas on contract coke for this quarter the price was around \$3. Merchant furnaces dependent on the market for coke are not selling for first quarter, and around Pittsburgh the pig iron price for this year is stiffening.

Elsewhere, however, pig iron has developed weakness, notably at St. Louis and Cincinnati, and to some extent at Chicago. Cleveland sellers have again been more active in Southern Ohio at the expense of prices.

In the finished steel market railroad demand thus far has not given the stimulus looked for

early in the fall. Rail orders are about equal to those placed last year up to Nov. 1—something over 1,000,000 tons—while car buying is considerably less.

Large buyers of steel bars are still postponing the issue on the fourth quarter price, since deliveries continue to be made on 1.90c. contracts. There is the complication in the Cleveland district of a 2c. mill price, identical with the Pittsburgh district base, and as low as 1.90c., Cleveland mill, has been reported.

Some curtailment in sheet mill operations has resulted from the slackening of automobile demand and the market does not have the firmness shown in early October.

A freight boat just placed at a Lake yard by the Interlake Steamship Co. will take 5000 tons of plates and shapes and there is fresh inquiry for two boats of like size.

New railroad buying includes 1500 cars for the Louisville & Nashville, which purchased also 18 locomotives. On Oct. 1, railroads had 16,846 freight cars on order compared with 21,055 on the same date last year.

In fabricated structural steel, the past week was an average one—bookings of 23,000 tons in the larger projects and 33,000 tons in fresh inquiries. Included is considerable plate work, 5900 tons being let for siphons in southern California and 6000 to 10,000 tons for a proposed pipe line at Yakima, Wash.

Cold-finished steel bars in ordinary lots have settled to 2.40c., Pittsburgh, while 2.30c. still represents the market to larger buyers.

With shipments of cast iron pressure pipe equal to production, new business is falling off. Backlogs may be sufficient, however, to steady operations for some time.

A change is coming over the ferromanganese situation. While much of this year's buying was at the \$88 figure due to active three-cornered competition, little business can now be done at less than \$95 per ton, furnace, with indications that next year's contracts will call for \$100.

September exports of iron and steel at 182,071 gross tons exceeded those for August by 6.2 per cent. Imports at 85,484 tons fell off 6.6 per cent. For the nine months exports at 1,576,959 tons showed a gain of nearly 21 per cent over the same period of 1925. Imports of 872,442 tons to Oct. 1, this year, represent a gain of 25.5 per cent. Germany led in the September imports as well as in those for the nine months.

THE IRON AGE composite prices remain unchanged for the third successive week. That for pig iron is \$19.71 per gross ton and that for finished steel 2.453c. per lb.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 26, 1926	Oct. 19, 1926	Sept. 21, 1926	Oct. 27, 1925
No. 2 fdy., Philadelphia...	\$21.76	\$21.76	\$21.76	\$22.76
No. 2, Valley furnace.....	18.50	18.50	17.50	19.50
No. 2, Southern, Cin'ti....	23.69	23.69	24.19	24.05
No. 2, Birmingham, Ala....	20.00	20.00	21.00	20.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	22.00
Basic, del'd, eastern Pa....	21.00	20.50	20.75	22.00
Basic, Valley furnace.....	18.00	18.00	17.50	19.00
Valley Bessemer del. P'gh.	21.26	20.76	20.26	21.76
Malleable, Chicago*	21.00	21.00	21.00	22.00
Malleable, Valley.....	18.50	18.50	17.50	19.50
Gray forge, Pittsburgh....	19.76	19.76	18.76	20.76
L. S. charcoal, Chicago.....	27.04	27.04	29.04	29.04
Ferromanganese, furnace.	88.00	88.00	88.00	115.00

Rails, Billets, etc., Per Gross Ton:

O.-h. rails, heavy, at mill.	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	33.00	36.96
Bess. billets, Pittsburgh...	35.00	35.00	35.00	33.50
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	33.50
O.-h. sheet bars, P'gh....	36.00	36.00	36.00	33.50
Forging billets, base, P'gh.	40.00	40.00	40.00	40.00
O.-h. billets, Phila.....	40.30	40.30	40.30	39.30
Wire rods, Pittsburgh....	45.00	45.00	45.00	45.00
Skelp, gr. steel, P'gh, lb...	1.90	1.90	1.90	1.90

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.22	2.22	2.22	2.12
Iron bars, Chicago.....	2.00	2.00	2.00	1.90
Steel bars, Pittsburgh....	2.00	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York....	2.24	2.24	2.24	2.24
Tank plates, Pittsburgh...	1.90	1.90	1.90	1.80
Tank plates, Chicago.....	2.10	2.10	2.10	2.10
Tank plates, New York....	2.24	2.24	2.24	1.94
Beams, Pittsburgh.....	2.00	2.00	2.00	1.90
Beams, Chicago.....	2.10	2.10	2.10	2.10
Beams, New York.....	2.24	2.24	2.24	2.24
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Oct. 26, 1926	Oct. 19, 1926	Sept. 21, 1926	Oct. 27, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	3.00
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.20	3.20	3.10	3.10
Sheets, galv., No. 24, P'gh.	3.85	3.85	3.85	3.85
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	4.05	4.05	3.95	3.95
Sheets, blue, 9 & 10, P'gh.	2.30	2.30	2.30	2.30
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.50	2.50	2.40	2.40
Wire nails, Pittsburgh....	2.65	2.65	2.65	2.65
Wire nails, Chicago dist.				
mill.....	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh....	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill.....	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.35
Barbed wire, galv., Chicago				
dist. mill.....	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$14.50	\$14.50	\$15.25	\$18.00
Carwheels, Philadelphia...	17.00	17.00	17.50	18.50
Heavy melting steel, P'gh.	17.50	17.50	17.50	19.00
Heavy melting steel, Phila.	16.50	16.50	17.00	17.00
Heavy melting steel, Ch'go	13.00	13.00	14.00	16.00
No. 1 cast, Pittsburgh....	16.00	16.00	16.25	18.00
No. 1 cast, Philadelphia...	17.50	17.50	18.00	19.00
No. 1 cast, Ch'go (net ton)	16.50	16.50	17.00	18.00
No. 1 RR. wrot. Phila....	17.00	17.00	17.50	18.50
No. 1 RR. wrot. Ch'go (net)	12.75	12.75	13.50	15.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$4.00	\$3.50	\$3.50	\$8.50
Foundry coke, prompt....	5.00	4.50	4.50	8.50

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.25	14.25	14.50	14.75
Electrolytic copper, refinery	13.80	13.87½	14.05	14.00
Zinc, St. Louis.....	7.22½	7.35	7.45	8.60
Zinc, New York.....	7.57½	7.70	7.80	8.95
Lead, St. Louis.....	7.90	8.10	8.50	9.25
Lead, New York.....	8.85	8.36	8.75	9.60
Tin (Straits), New York...	69.12½	70.50	69.87½	63.25
Antimony (Asiatic), N. Y.	14.00	14.25	15.50	19.00

Pittsburgh

Excited Coal Market Overshadows Iron and Steel Situation—New Gage and Extras for Long Termes

PITTSBURGH, Oct. 26.—An excited coal market and its possible bearing on the iron and steel situation have come to the forefront in trade considerations in this district. With no material letdown in export demands, there has come a strong demand from the railroads and from industrial consumers who had held the idea that there was little danger of a shortage and accordingly had made little or no preparation against future requirements. These demands, coming on top of the natural increase in purchases for domestic use at this time of year and the fact that a number of the large producers have large contracts for coal to be stocked by the steel companies, have created something of a shortage and a sharp advance in prices.

Mines long idle are being started up, because prices are high enough to insure profitable operation, and the most significant feature of these resummptions is that they are chiefly by operators who had subscribed to the Jacksonville wage agreement of Feb. 1, 1923, and they are starting their mines on that scale of wages, which averages approximately one-third higher than that ruling in the non-union fields. This development has tended to attract men from the non-union districts and to create an unsettled labor situation, with the result that the fear now is common that there must be some adjustment upward of the non-union wages if the men are to be held. This carries a threat of higher

coke costs to the pig iron producers, because the contracts carry a wage clause that imposes on the buyer any advance in wages.

Some pig iron producers have further stiffened their asking prices in anticipation of higher coke prices, and those who are still quoting the prices of a week ago are now making the restriction that they are strictly for tonnages for prompt shipment. Spot furnace coke has sold as high as \$4.50 per net ton at ovens and foundry grade at the usual premium of \$1 a ton, with spot offerings scant even at those prices, because so many coke producers have shut down ovens to be free to ship coal. There is an asking price of \$5 on monthly contracts, and that price also is being named against first quarter inquiries. The average price on contracts for furnace coke for this quarter was approximately \$3.

The steel market continues to grow quieter. The decline in the production of automobiles is progressive, and it is now estimated that output is not much more than 50 per cent of the September average, with some of the manufacturers which hitherto have been able to maintain schedules among those that are curtailing. This has meant a further recession in the steel demands of that industry. Pipe and tin plate are not doing as well as they did recently, although the leading maker of the latter product, with all plants that are rated as economical units in operation, is planning to start one of its works that has been regarded merely as an emergency plant. Structural lettings are dwindling, and there is an accompanying falling off in the call for plain material. The lines of steel associated with agriculture are less active. The recession in demand is fairly general and is really marked in the automotive steels.

The surprising feature of the situation is that ingot production is holding up rather well. The Youngstown

district shows a further loss of output, but the Greater Pittsburgh area as a whole is running at 80 per cent of capacity. There are admissions, however, that this rate is not warranted by the demand. October has not done as well as September, and the explanation seems to be in the fact that production ran ahead of consumption. With October production above requirements, the prospect is for even lighter business in November.

Pig Iron.—The market continues to reflect the strength of the coke market, which in turn is responding to the extremely strong coal situation. At least three pig iron producers are now unwilling to take business at less than \$18.50, Valley furnace, for basic, \$19 for No. 2 foundry and malleable, and \$19.50 for Bessemer, but except on the last-named grade these prices have not been established by sales. Sales of foundry iron in the week under review have all been at \$18.50, Valley furnace, and that price is still available on lots for delivery between now and the end of the year. There has not been an inquiry to test the market on basic iron, and the prices quoted are merely the appraisals of producers, although probably as low as they would sell at in view of the coke situation. Large consumers are not showing a great deal of concern about supplies, being well covered to the end of the year and in some cases beyond, since they will not require all of the iron bought for delivery this year. Furnace yard stocks of iron are fairly large, but supplies of "free" iron are moderate and, because of the possibility of higher prices later, are firmly held.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.00 to \$18.50
Bessemer	19.50
Gray forge	18.00 to 18.50
No. 2 foundry	18.50 to 19.00
No. 3 foundry	18.00
Malleable	18.50
Low phosphorus, copper free....	28.00

Ferroalloys.—Important consumers are protected by contracts until the end of the year on ferromanganese, spiegeleisen and high grade ferrosilicon, and are not yet showing interest in next year's requirements. Specifications against contracts are steady, but new business amounts to little. Prices are unchanged.

Cold-Finished Steel Bars and Shafting.—The market has settled to a base of 2.40c., Pittsburgh, on ordinary tonnages. A spread of \$4 a ton, such as recently existed between prices on large and ordinary tonnages, could not last; either the market had to stiffen on the large lots or weaken on the small tonnages, and it did the latter because of decreasing demands from the automobile parts makers and a consequent increase in competition for small-lot business. Ground shafting prices have been revised, effective Oct. 20, as follows: 1½-in., 3.50c., base, mill; 1 3/16-in. to 1½-in., 3c.; 1 9/16-in. to 1½-in., 2.85c.; 1 15/16-in. to 2 7/8-in., 2.70c.; 2 15/16-in. to 7-in., 2.55c., in carload lots, with an extra of 25c. per 100 lb. for less than carloads, all prices being subject to the standard extras, dated Nov. 12, 1925. Changes in the size brackets bring about substantially lower prices on all sizes larger than 1½-in.

Semi-Finished Steel.—There is still a paucity of specifications against billet and slab orders, and the slowing down in the automobile industry also is responsible for a less urgent demand for forging quality steel. The strip mills and forging shops are slowing down. A high rate of operation among sheet mills, except those rolling automobile body sheets, is reflected in a well-sustained movement of sheet bars. There is just a fair call for wire rods. Prices are holding well, despite occasional offerings through middlemen at a concession of \$2 a ton of billets and slabs representing accumulations at producing mills. The reaction among consumers to the proposed extras on semi-finished steel, published in THE IRON AGE, Oct. 14, is unfavorable, and it is likely that adoption will be vigorously opposed.

Wire Products.—Producers in this area make varied reports as to business; those who still make fence and fencing materials find this month to have fallen behind September in sales and shipments because of the changed agricultural situation, while those that reeled sail in that direction note little change in shipments as compared with those of last month. On a nation-wide basis, business for this month is well behind last month's because of the lighter demands from the agricultural districts. Prices are fairly well maintained.

Rails and Track Supplies.—There is some quickening of interest in track supplies for delivery with the standard-section rails recently placed. The Pennsylvania Railroad has asked for prices on 350,000 tie plates, 1200 tons of spikes and 12,000 pairs of splice bars. The boom in the coal market is stimulating the demand for light-section rails and also for small spikes. Prices are given on page 1231.

Tubular Goods.—Demand for butt welded pipe has fallen to slim proportions and that in lap welded, while still described as good, has suffered a seasonal recession so far as urgency in delivery is concerned. Delivery promises on oil and gas well pipe are shortening, as the desire for supplies lessens and the mills catch up with their obligations. Leading producers are well supplied with line pipe, and the outlook is for a sustained operation through the winter of the large outside-diameter pipe furnaces. Demand for boiler tubes still is below makers' desires. Discounts are given on page 1231.

Sheets.—Measured by specifications and mill operations, the sheet market still is active, but new business suffers from the fact that so many important consumers were protected against their requirements for the present quarter before prices advanced and can draw against their contracts. There is also the factor of the reduced schedules of the motor car industry, which, as a whole, is taking less steel than usual, even for this time of year. The American Sheet & Tin Plate Co. is operating 90 per cent of its sheet mills, and the rate of independent operations is at about that basis, but actual production of most companies is above the rated mechanical operation. The market is not yet fully established at the advances announced about five weeks ago. A new base gage and a revision of gage

THE IRON AGE Composite Prices

Finished Steel

Oct. 26, 1926, 2.453c. Per Lb.

One week ago	2.453c.
One month ago	2.439c.
One year ago	2.410c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.	Jan. 5:	2.403c.	May 18
1925	3.560c.	Jan. 6:	2.396c.	Aug. 18
1924	2.789c.	Jan. 15:	2.460c.	Oct. 14
1923	3.824c.	April 24:	2.446c.	Jan. 2

Pig Iron

Oct. 26, 1926, \$19.71 Per Gross Ton

One week ago	\$19.71
One month ago	19.46
One year ago	20.38
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1926	\$21.54,	Jan. 5:	\$19.46,	July 13
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

Base Per Lb.

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York.....	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

Base Per Lb.

F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York.....	2.24c.
C.i.f. Pacific ports.....	2.30c.

Structural Shapes

Base Per Lb.

F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York.....	2.34c.
C.i.f. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

Base Per Lb.

All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.
Cotton ties, f.o.b. Atlantic ports, per bundle of 45 lb.....	\$1.22
Cotton ties, f.o.b. Gulf ports, per bundle of 45 lb.....	1.20

Cold-Finished Steel

Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.30c. to 2.40c.
Bars, f.o.b. Chicago.....	2.40c.
Bars, Cleveland	2.45c.
Shafting, ground, f.o.b. mill.....	2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.25c. to 3.50c.
Strips, f.o.b. Cleveland mills.....	3.15c. to 3.40c.
Strips, delivered Chicago.....	3.35c. to 3.70c.
Strips, f.o.b. Worcester mills.....	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

Base Per Keg

Wire nails	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1-in.....	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails.....	2.65

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.35
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh	\$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.....	65.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill.....	2.50c.
Nos. 9 and 10, del'd Philadelphia.....	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	3.00c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill.....	3.20c.
No. 24, del'd Philadelphia.....	3.32c. to 3.42c.
No. 24, f.o.b. Birmingham.....	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	4.25c.
No. 24, f.o.b. Pittsburgh, B grade.....	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill.....	4.05c.
No. 24, del'd Philadelphia.....	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham.....	4.20c. to 4.30c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	2.15c. to 2.25c.
No. 28, f.o.b. Chicago dist. mill.....	2.25c. to 2.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill.....	4.75c.
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Tin Plate

Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100	20-lb. coating I.C. \$16.20
1b. base	25-lb. coating I.C. 17.90
8-lb. coating I.C. 11.70	30-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85	40-lb. coating I.C. 21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E.

Series

Numbers

Base Per 100 Lb.

2100* (1/4% Nickel, 0.10% to 0.20% Carbon)	\$3.20 to \$3.25
2300 (3 1/2% Nickel)	4.35 to 4.50
2500 (5% Nickel)	5.50 to 5.65
3100 (Nickel Chromium)	3.40 to 3.50
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	4.25 to 4.50
5100 (Chromium Steel)	3.40 to 3.50
5200* (Chromium Steel)	7.80 to 7.90
6100 (Chrom. Vanadium bars).....	4.80
6100 (Chrom. Vanad. spring steel).....	3.80
9250 (Silicon Manganese spring steel).....	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	\$32.00 to \$4.00
Light (from billets), f.o.b. Ch'go mill.....	\$4.00 to \$5.00

Track Equipment

(F.o.b. Mill)

Base Per 100 Lb.

Spikes, 3/4 in. and larger.....	\$2.80 to \$3.00
Spikes, 3/4 in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	2.90 to 4.50
Track bolts, all sizes.....	2.25 to 2.35
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Inches	Steel	Galv.	Inches	Black	Galv.
1/4	45	19 1/2	3/4 to 1 1/4	22	11
1/2 to 3/4	51	25 1/2	1 to 1 1/4	28	13
1	56	31 1/2			
1 1/4 to 1 3/4	60	35 1/2			
1 3/4 to 2	62	39 1/2			

Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 3	59	47 1/2	2 1/2 to 3	24	11
3 and 4	64	51 1/2	3 to 4	25	13
4 and 5	64	51 1/2	4 to 5	25	13
5 and 6	64	51 1/2	5 to 6	25	13
6 and 7	64	51 1/2	6 to 7	25	13
7 and 8	64	51 1/2	7 to 8	25	13
8 and 9	64	51 1/2	8 to 9	25	13
9 and 10	64	51 1/2	9 to 10	25	13
10 and 11	64	51 1/2	10 to 11	25	13
11 and 12	64	51 1/2	11 to 12	25	13

Butt Weld, extra strong, plate ends

1/4	41	24 1/2	1/4 to 3/4	19	5 1/2
1/2 to 3/4	47	30 1/2	3/4 to 1	21	7
1	53	36 1/2	1 to 1 1/4	28	12
1 1/4 to 1 3/4	58	41 1/2	1 1/4 to 1 3/4	28	14
1 3/4 to 2	60	43 1/2			
2 to 3	61	45 1/2			

Lap Weld, extra strong, plain ends

2	53	42 1/2	2	23	9
2 1/2 to 3	57	46 1/2	2 1/2 to 3	23	13
3 to 4	58	47 1/2	3 to 4	23	14
4 to 5	58	47 1/2	4 to 5	23	14
5 to 6	58	47 1/2	5 to 6	23	14
6 to 7	58	47 1/2	6 to 7	23	14
7 to 8	58	47 1/2	7 to 8	23	14
8 to 9	58	47 1/2	8 to 9	23	14
9 to 10	58	47 1/2	9 to 10	23	14
10 to 11	58	47 1/2	10 to 11	23	14
11 to 12	58	47 1/2	11 to 12	23	14

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2 1/2 in.....	27
2 1/2 to 3 in.....	37
3 in.....	40
3 1/2 to 4 in.....	42 1/2
4 to 4 1/2 in.....	43
4 1/2 to 5 in.....	44
5 to 5 1/2 in.....	45
5 1/2 to 6 in.....	46
6 to 6 1/2 in.....	47
6 1/2 to 7 in.....	48
7 to 7 1/2 in.....	49
7 1/2 to 8 in.....	50
8 to 8 1/2 in.....	51
8 1/2 to 9 in.....	52
9 to 9 1/2 in.....	53
9 1/2 to 10 in.....	54
10 to 10 1/2 in.....	55
10 1/2 to 11 in.....	56
11 to 11 1/2 in.....	57
11 1/2 to 12 in.....	58
12 to 12 1/2 in.....	59
12 1/2 to 13 in.....	60
13 to 13 1/2 in.....	61
13 1/2 to 14 in.....	62
14 to 14 1/2 in.....	63
14 1/2 to 15 in.....	64
15 to 15 1/2 in.....	65
15 1/2 to 16 in.....	66
16 to 16 1/2 in.....	67
16 1/2 to 17 in.....	68
17 to 17 1/2 in.....	69
17 1/2 to 18 in.....	70
18 to 18 1/2 in.....	71
18 1/2 to 19 in.....	72
19 to 19 1/2 in.....	73
19 1/2 to 20 in.....	74
20 to 20 1/2 in.....	75
20 1/2 to 21 in.....	76
21 to 21 1/2 in.....	77
21 1/2 to 22 in.....	78
22 to 22 1/2 in.....	79
22 1/2 to 23 in.....	80
23 to 23 1/2 in.....	81
23 1/2 to 24 in.....	82
24 to 24 1/2 in.....	83
24 1/2 to 25 in.....	84
25 to 25 1/2 in.....	85
25 1/2 to 26 in.....	86
26 to 26 1/2 in.....	87
26 1/2 to 27 in.....	88
27 to 27 1/2 in.....	89
27 1/2 to 28 in.....	90
28 to 28 1/2 in.....	91
28 1/2 to 29 in.....	92
29 to 29 1/2 in.....	93
29 1/2 to 30 in.....	94
30 to 30 1/2 in.....	95
30 1/2 to 31 in.....	96
31 to 31 1/2 in.....	97
31 1/2 to 32 in.....	98
32 to 32 1/2 in.....	99
32 1/2 to 33 in.....	100

Beyond the above discounts, 5 to 7 five extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.....	60
1 1/4 to 1 1/2 in.....	62
1 1/2 in.....	64
1 3/4 in.....	66
2 to 2 1/2 in.....	68
2 1/2 to 3 in.....	69

Hot Rolled

2 and 2 1/4 in....	84	3 1/4 and 3 1/2 in..	50
2 1/4 and 2 1/2 in..	43	4 in.	53
2 1/2 in.....	48	4 1/4, 5 and 6 in..	48

differentials on long terne sheets, although dated Oct. 5, has only now been issued by the American Sheet & Tin Plate Co. No. 24 gage is the base gage, and the base price is 4.30c., producing a price of 4.80c. for No. 28 gage, as against 4.65c., hitherto ruling. The new and old gage differentials compare as follows:

	New	Old
No. 30 gage.....add	\$0.90.....add	\$0.50
No. 29 gage.....add	0.70.....add	0.25
No. 28 gage.....add	0.50.....add	base
No. 27 gage.....add	0.35.....deduct	0.15
Nos. 25-26 gage.....add	0.25.....deduct	0.30
No. 24 gage.....add	base.....deduct	0.45
No. 23 gage.....deduct	0.15.....deduct	0.45
No. 22 gage.....deduct	0.15.....deduct	0.45
No. 21 gage.....deduct	0.15.....deduct	0.60
No. 20 gage.....deduct	0.20.....deduct	0.60
No. 19 gage.....deduct	0.20.....deduct	0.60
No. 18 gage.....deduct	0.35.....deduct	0.60
No. 17 gage.....deduct	0.50.....deduct	0.60
No. 16 gage.....deduct	0.50.....deduct	0.75
No. 15 gage.....deduct	0.50.....deduct	0.75
No. 14 gage.....deduct	0.60.....deduct	0.90

Tin Plate.—The American Sheet & Tin Plate Co. is still having good business and a high rate of mill operation, as is indicated by preparations that are being made to start its LaBelle plant in Wheeling, W. Va., an eight-mill unit which has been idle since June, 1924, and has long been regarded as an emergency plant. This resumption is not to offset a shutdown of other plants but is said to have been found necessary to make up losses in production arising out of plant repairs and other causes. Independent mills are still having a good operation but, having less business in sight than the leading producer, are not pushing output. The continued strength of pig tin still points to higher prices in tin plate for the first half of 1927, but if there is an advance it may possibly take the form, as it did a year ago, of a reduction in the preferentials.

Hot-Rolled Flats.—These products, like others finding their principal outlet to the automotive industry, continue to slip in demand, but in this district the tendency is strong to match lighter sales with lower production, rather than to attempt sustained mill operations through price concessions.

Cold-Rolled Strips.—Demand still is decreasing, in keeping with the declining operating schedules of the motor car builders. Prices still favor buyers of large tonnages. There is keen competition for orders of 100 tons or more, and the price depends on the anxiety of producers for orders that will provide rolling schedules. On the small lots, which just now are more numerous than large ones, the market is still quotable at 3.50c. to 3.60c., base Pittsburgh.

Steel and Iron Bars.—New business in steel bars is lighter, but the mills continue to make a strong stand at 2c., base Pittsburgh, for the larger lots. The recession in the demand for bolts, nuts and rivets and cold-finished steel bars has made possible the stretching out of supplies received against late September specifications. This not only has cut into the demand but has further deferred the full establishment of 2c. as a minimum, as most of the shipments on September specifications carried a price of 1.90c.

Structural Steel.—Awards of fabricated steel continue to dwindle, and there is less demand for plain material. Mills are still insisting on 2c., base Pittsburgh, for large structural shapes in large lots and are quoting 2.10c. on small lots, but there is not much evidence of sales even of small lots at more than 2c.

Plates.—The Pressed Steel Car Co. has been awarded 1000 gondola cars by the Louisville & Nashville Railroad, but car orders are not yet large enough to provide local shops and steel foundries with any material increase in operations and the call for plates from those plants is still moderate. There is a fairly good movement of plates for barges, tanks and large-diameter pipe, but all demands are being easily supplied. Prices hold at 1.90c., base Pittsburgh, either on large or small lots.

The United States Engineer, Huntington, W. Va., is asking bids until Nov. 2, for four chains for gate winches, as per Circular 40. Also, until Nov. 3, for 127,000 lb. of high carbon manganese alloy steel plates; 132,000 lb. of structural steel channels, and 2856 lb. of structural steel plates.

Bolts, Nuts and Rivets.—Bolt and nut makers here are not directly affected, so far as orders are concerned by the letdown in automobile production, because little of that business comes here. But lighter orders suggest increased competition from those that have been serving the motor car industry. Large makers continue to quote recent prices, but there is shading by smaller producers. Rivets are easy. Prices and discounts are given on page 1233.

Coke and Coal.—Materially higher prices for coal, due to the continued export demands, coupled with larger domestic purchases, are having increasing influence on the coke market. Demands for coke are moderate, but there is only a small supply, and producers want as much for coke as they can realize from coal. Lately no sales of spot furnace grade have been made under \$4 per net ton, ovens, and as much as \$4.50 has been paid by furnace interests who have found it necessary to supplement shipments on contracts. As much as \$5 is wanted by some producers either for spot or contract shipment, but this represents largely a translation of \$3 coal and is yet to be done. It is reported that a contract for 15,000 tons a month for the first half of next year was recently closed at \$4.25, with the wage clause, the buyer being a Valley furnace. Spot foundry coke is bringing \$5 to \$5.50. Mine run steam and coking coal are selling at from \$3 to \$4 per net ton at mines, and even higher prices are reported on mine run gas coal. Slack grades are bringing double what they did a few weeks ago.

Old Material.—The market is not showing much activity, but it has a firm tone, particularly on heavy melting steel, offerings of which are very moderate, and on the blast furnace grades, demand for which is stimulated by the strong market for coke. The only sale of consequence was one amounting to approximately 10,000 tons of heavy melting steel and scrap rails, the former selling at \$17.50 and the latter at \$17. Since the common asking price for heavy melting grade is \$18, the explanation for the transaction at \$17.50 is found in the fact that the sale was to a mill to which the freight on locally produced scrap is less than to any other point in the district and that the several dealers who sold figured on being able to pick up the small tonnage each took. This grade is not offered at less than \$18 for shipment to Vandergrift, Butler, Steubenville or Monessen. All consumers are said to be insisting on No. 1 railroad steel, or its equivalent in industrial scrap, on orders for heavy melting steel, and there is a scarcity of material that will meet the specifications. It is this fact, rather than a brisk demand, that keeps prices strong. Our quotations on heavy melting steel are for No. 1 railroad, or equivalent, steel scrap. There is no established market here for No. 2 heavy melting steel, but a grade called No. 1 yard steel can be shipped to at least one point in the district, and it is quotable at \$1 per ton under heavy melting grade.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$17.50 to \$18.00
No. 1 yard steel scrap.....	16.50 to 17.00
Scrap rails	17.00
No. 1 cast, cupola size.....	16.00 to 16.50
Compressed sheet steel.....	16.00 to 16.50
Bundled sheets, sides and ends..	15.00 to 16.50
Railroad knuckles and couplers..	18.50 to 19.00
Railroad coil and leaf springs...	18.50 to 19.00
Low phosphorus blooms and billet ends	20.00 to 20.50
Low phosphorus mill plates.....	19.50 to 20.00
Low phosphorus, light grade.....	17.50 to 18.00
Low phosphorus punchings.....	18.50 to 19.00
Steel car axles.....	21.50 to 22.00
Cast iron wheels.....	16.00 to 16.50
Rolled steel wheels.....	18.50 to 19.00
Machine shop turnings.....	12.00 to 12.50
Short shoveling steel turnings...	13.50 to 14.00
Sheet bar crops.....	18.00 to 18.50
Heavy steel axle turnings.....	15.50 to 16.00
Short mixed borings and turnings	13.00 to 13.50
Heavy breakable cast.....	15.50 to 16.00
Cast iron borings.....	13.00 to 13.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	17.50 to 18.00
Railroad or automobile malleable scrap	17.00 to 17.50

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel F.o.b. Pittsburgh or Youngstown

Billets and Blooms	Per Gross Ton
Rerolling, 4-in. and over.....	\$35.00
Rerolling, under 4-in. to and including 1½-in.	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
Smaller than 8 in. x 2 in.	36.00

Skelp	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock	\$5.00 per ton over base
Carbon 0.20% to 0.40% ..	3.00 per ton over base
Carbon 0.41% to 0.55% ..	5.00 per ton over base
Carbon 0.56% to 0.75% ..	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is \$44. Cleveland mill base, \$45.

Prices of Raw Materials

Ores	Per Gross Ton
Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	
Per Unit	

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian. 9.50c. to 10c.	
Iron ore, Swedish, average 56% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	40c. to 42c.
Manganese ore, high grade, nominal. 35c. to 44c.	
Tungsten ore, high grade, per unit, in 60% concentrates	\$11.75 to \$12.50
Per Ton	
Chrome ore, Indian basic, 48% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard	\$22.50
Per Lb.	
Molybdenum ore, 85% concentrates of MoS ₂ , delivered	50c. to 55c.

Coke	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$4.00 to \$4.50
Foundry, f.o.b. Connellsville prompt	5.00 to 5.50
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	12.00
Foundry, by-product, Newark or Jersey City, delivered	9.50 to 10.77
Foundry, Birmingham	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City	10.00

Coal	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$3.00 to \$4.00
Mine run coking coal, f.o.b. W. Pa. mines	3.00 to 4.00
Mine run gas coal, f.o.b. Pa. mines	3.75 to 4.25
Steam slack, f.o.b. W. Pa. mines..	2.50 to 2.75
Gas slack, f.o.b. W. Pa. mines....	2.75 to 3.00

Ferromanganese	Per Gross Ton
Domestic, 80%, furnace or seab'd. \$38.00 to \$35.00	
Foreign, 80%, Atlantic or Gulf port, duty paid	\$8.00

Spiegeleisen	Per Gross Ton Furnace
Domestic, 19 to 21%	\$32.00 to \$34.00
Domestic, 16 to 19%	\$1.00 to \$3.00

Electric Ferrosilicon	Per Gross Ton Delivered
50%	\$85.00 to \$87.50
75%	145.00 to 150.00
Per Gross Ton Furnace	Per Gross Ton Furnace
10%	\$25.00
11%	\$7.00
14 to 16%	\$45 to 46.00

Bessemer Ferrosilicon	Per Gross Ton
F.o.b. Jackson County, Ohio Furnace	
10%	\$33.00
11%	35.00

Silvery Iron	Per Gross Ton
F.o.b. Jackson County, Ohio Furnace	
6%	\$25.50
7%	26.50
8%	27.50
9%	29.00

Other Ferroalloys	Per Gross Ton
Ferrotungsten, per lb. contained metal, del'd	\$1.05 to \$1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	\$3.25 to \$4.00
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$209.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories	Per Net Ton
Fluorspar	
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid. \$17.00 to \$17.50	
Domestic, No. 1 ground bulk, 96 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines.....	\$32.00

Fire Clay	Per 1000 f.o.b. Works
High Duty	
Pennsylvania	\$40.00 to \$45.00
Maryland	43.00 to 46.00
New Jersey	55.00 to 75.00
Ohio	40.00 to 43.00
Kentucky	40.00 to 43.00
Illinois	40.00 to 43.00
Missouri	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick	Per 1000 f.o.b. Works
Pennsylvania	\$40.00 to \$45.00
Chicago	\$2.00
Birmingham	\$0.00
Silica clay, per ton.....	\$5.00 to 9.00

Magnesite Brick	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$95.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	49.00

Chrome Brick	Per Net Ton
Standard size	\$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts	Per Cent Off List
(Less-than-Carload Lots) (F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	60 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ½ x 4 in., 4½, 10 and 5	
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.75c. to 8.50c. per lb. off list

*F.o.b. Chicago and Pittsburgh.
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-pressed nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts	Per Cent Off List
(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)	
Semi-finished hexagons nuts:	
½ in. and smaller, U. S. S.	80, 10 and 5
¾ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ½ in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	50, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts	Per 100 Net S.A.E. U.S.S.
(Actual freight allowed up to but not exceeding 50c. per 100 lb.)	
(To jobbers and consumers in large quantities)	
Per 100 Net S.A.E. U.S.S.	Per 100 Net S.A.E. U.S.S.
½-in.....	\$9.44 \$9.44
¾-in.....	9.515 9.515
1-in.....	9.62 9.62
1½-in.....	9.79 9.79
2-in.....	1.01 1.05
2½-in.....	1.35 1.43
3-in.....	1.70 1.73
Larger sizes.—Prices on application.	

Large Rivets	Base Per 100 Lb.
F.o.b. Pittsburgh.....	\$2.45 to \$2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.00 to 2.75

Small Rivets	Per Cent Off List
F.o.b. Pittsburgh.....	70, 10 and 5 to 70 and 10
F.o.b. Cleveland	70, 10 and 5 to 70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws	Per Cent Off List
(Freight allowed up to but not exceeding 50c. per 100 lb.)	
Milled cap screws.....	90 and 10
Milled standard set screws, case hardened, 90 and 5	
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread, 90, 10 and 10	
Upset hex. cap screws, S.A.E. thread, 90, 10 and 10	
Upset set screws	90, 10 and 5
Milled studs	70 and 5

Chicago

Steel Specifications Decline Except in Rails—Sheets Weaker

CHICAGO, Oct. 26.—Steel mill operations in this district have not changed within the week, but this is due to the fact that the railroads have issued sizable specifications against fall rail contracts rather than to a continuation of the rate of demand which prevailed earlier in the month. Smaller specifications from the automotive industry are attributed not only to reduced activity but also to the fact that the three-year inventory required in Michigan is close at hand. The past month has seen a rapid decrease in specifications from fabricators, but mills point to the fact that even yet the inflow of specifications is up to the average rate which has prevailed so far this year.

On the whole, consumers are following a more cautious attitude than was the case earlier in the month. Excepting in rails, both sales and specifications of finished steel products so far in October are slightly behind those of September. Sales at the moment are lagging behind, while specifications are equal to, shipments.

Pig Iron.—Reports of weakness in the price of malleable iron appear to lack foundation in view of the fact that sales in small lots but in fair aggregate volume were made in this territory during the week. For the most part, users are well covered for the remainder of the year, and the center of interest now lies in first quarter iron. Five foundries in western and northern Illinois have placed a total of 5000 tons of Northern iron for delivery during the first and second quarters. There is an inquiry before the trade from Cedar Rapids, Iowa, for 1000 tons of foundry iron for first quarter. The fuel situation in the East is having some bearing on the interest being taken in foundry iron. Shipments for October are still slightly ahead of those for September, and producers report a 10 per cent reduction in furnace stocks so far this month.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail)	24.18
Low phos., sil. 1 to 2 per cent, copper free	\$29.50 to 30.00
Silvery, sil. 8 per cent.	32.29
Bessemer ferrosilicon, 14 to 15 per cent	45.79

Ferroalloys.—The market is quiet and without feature. Spiegeleisen coming here is of foreign make for the most part, and dealers are quoting \$33 in sizable lots, and \$34, base Hazzard, Pa., for carloads of the 19 to 21 per cent grade. Ferromanganese is quiet, and prices range from \$88 to \$100, seaboard, for delivery over the remainder of this year.

We quote 80 per cent ferromanganese, \$95.56 to \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$40.76 to \$41.76, delivered Chicago.

Sheets.—With the majority of large users well taken care of until the end of the year, new buying is light and considerable pressure is being exerted on prices, which do not show the strength of a week ago. Specifications are in good volume and well in excess of current shipments. Deliveries extend well toward the first of the year, and one company is operating its full complement of 28 hot mills. The demand for blue annealed, black and galvanized sheets is evenly distributed, but makers report that this year has seen a large growth in the use of sheets for roofing purposes.

Chicago delivered prices from mill are 3.25c. for No. 24 black; 2.55c. for No. 10 blue annealed; 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Plates.—This has been another good week in sales of plates for tanks, principally for oil storage. Total bookings in tank steel amount to about 10,000 tons, and inquiries now before the trade aggregate 20,000 tons. Specifications against contracts from tank makers are good, and there appears to be little, if any, let-up in tank-building programs, which have been heavy during the late summer and early fall. Specifications from car builders are light. The Southern Pacific is in the market for material for 500 box cars, which will be built in its own shops. The recent inquiry from the St. Paul is active, and car builders expect orders to be placed at an early date. The Louisville & Nashville has placed 1000 gondola cars with the Pressed Steel Car Co., and 200 automobile and 200 flat cars with the Tennessee Coal, Iron & Railroad Co. The gondola cars will be built in the East, and Chicago mills, therefore, will not benefit by the placing of the contract. The demand for plates, although fairly steady from some sources, is not up to mill capacity, and in view of the lack of car orders and the diminishing rate of building construction, deliveries have greatly improved since mid-summer. Mills are now able to make shipments of universal mill plates within three to four weeks, and sheared plates can be had in two to three weeks. Although 2.10c., Chicago, is still the general market, plates do not appear as strong as structural shapes or bars.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—A new central police and court building in this city will require 3000 tons, and 4000 tons for the Woodlawn Theater and Hotel, Chicago, is an active pending job. An addition to the National League ball park will take 1000 tons of plain material, and several theaters will take 1500 tons. Awards for the week are light, but fresh inquiry has taken a decided upturn. Contracts taken by fabricators during the early fall have not been heavy, and with lighter bookings and the approach of winter, prices on fabricated steel have suffered. The general level is close to that of last spring, and keen competition does not give promise of any improvement this year. Specifications against contracts for plain material show no improvement, but the total tonnage passed to entry at the mills is still running close to the average rate for the first nine months of the year. Deliveries are improving and now average about four weeks, depending upon mill schedules.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Rails and Track Supplies.—Railroads are entering specifications against fall contracts, and all local capacity is again engaged. The Gary mill started this week at a reduced rate, but will be speeded up rapidly, it is said. Makers report no new business booked during the week, but formal contracts were signed for close to 100,000 tons of standard-section rails. The Chesapeake & Ohio has issued an inquiry for 45,000 tons of rails, and is also expected to buy accessories to the extent of about 35 per cent of the rail tonnage, since it has an extensive program under way for repairs to old trackage. Inquiry for steel tie plates is heavy, particularly in the St. Louis territory, where the Missouri-Kansas-Texas, the Missouri Pacific and the Wabash are out for tonnages. A small tonnage of iron tie plates was purchased this week, but on the whole buying of this commodity has been light this fall. Chicago producers now estimate that one-sixth of the rail tonnage already contracted for has been specified and although railroads are in most cases anxious to get initial shipments, the dates for the completion of the contracts are well in advance, ranging from four to nine months.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Bars.—Makers of soft steel bars report that new sales are running slightly below shipments but that actual specifications are equal to deliveries. Demand is widespread and comes from practically all classes of users. Warehouses catering to the users of reinforcing

bars are taking smaller tonnages, but demand has increased from other directions. Bar deliveries are holding steady at from three to six weeks. The slower pace of the automobile industry has had some effect upon the flow of specifications to local makers of alloy steel bars, but operations have not yet changed, holding at close to 80 per cent of capacity. The railroads have again come into the market for iron bars, and both new business and specifications are the best in the last month. Bar iron is steady at 2c., Chicago. Both makers of rail steel bars at Chicago Heights continue to operate on double turn, with their backlogs growing. Neither mill is actively seeking additional business in reinforcing steel, since they have all of that tonnage that they can handle. Demand for fence posts has improved but not to the extent makers had hoped for. Bed makers who are covered by contract are issuing fair specifications, and those who enter the market for tonnages as required are buying in larger lots and further ahead. Shipments are a little heavier than a year ago at this time, but fall a trifle short of the tonnage represented by new business and specifications.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 2c., base, Chicago.

Hot-Rolled Strip.—Demand is holding up well from the general run of users, although specifications from the automotive industry are lighter. Prices are a shade less firm at 2.60c., Chicago, for 6-in. and narrower material, and at 2.50c. for wider strips.

Cast Iron Pipe.—On the whole, the cast iron pipe market in and close to Chicago is quiet. Several small municipalities, such as Elmhurst and Broadmoor, Ill., have placed about 50 tons each and at a price close to \$40, Birmingham. Chicago will close Nov. 5 on 50 tons of offsets and Toledo, Ohio, will open bids Oct. 26 on 900 tons of 4 to 12-in. Class B pipe. Makers do not deny that an attractive tonnage would not bring much, if any, above \$39, base Birmingham, and the average small inquiry is being quoted at \$40 to \$40.50. Deliveries have not changed materially in the past few weeks, and pipe foundries find their books in much the same condition as a year ago. Last winter no concession was made in prices as an inducement for users to place orders during the cold weather, and with conditions as at present, the trade believes that it may carry out the same policy this year.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$51.20 to \$52.70; 6-in. and over, \$47.20 to \$48.70; Class A and gas pipe, \$4 extra.

Cold-Rolled Strip.—The market shows further signs of weakness, as demand tapers. Sales reported this week in the Chicago territory were at 3.05c., base Cleveland, or 3.35c., delivered Chicago. Chicago delivered prices range from 3.35c. to 3.70c.

Reinforcing Bars.—Awards made a week ago, most of which were taken by rail steel makers, appear to have removed from the market most of the active projects. Lettings in the past seven days have been

confined to a few small jobs calling for less than 50 tons each. However, the list of pending jobs which dealers believe will ultimately be placed is long and bulks large in tonnage. Fresh inquiry is small. Shipments from warehouses are well maintained, but with new business lagging, backlogs are being reduced, and a further reduction of operations may soon be necessary. Billet steel bars from warehouses are weak. On lots of 100 tons or over, 2.25c., warehouse, is readily done, while small quick-shipment orders are being taken at 2.60c. Awards and fresh inquiries are shown on page 1244.

Wire Products.—Specifications from the manufacturing trade are holding up to the average of the past few weeks, and producers in this territory have not been materially affected by curtailment in the production of automobiles. The jobbing trade in the Mountain States is light, but some improvement is noted from the South. Mill stocks are well rounded out, and deliveries are prompt. The general average of mill operation in the Chicago territory has advanced slightly and now stands at 65 per cent of capacity. Prices are shown on page 1231.

Bolts, Nuts and Rivets.—The demand for large rivets from the building trade is considerably easier, but makers of tanks are placing good orders. Small lots still bring \$2.75, Chicago. Specifications for bolts and nuts are steady, and makers report increased interest upon the part of the railroads and manufacturers of farm implements.

Old Material.—The market continues weak, and a number of grades are off 25c. to 50c. In some quarters, it is believed that the market is either at or close to the bottom, but this is not the view of users, who are holding out when possible for lower prices. There appears to be no hesitancy upon the part of buyers to accept shipments against past obligations, and scrap appearing on track is being readily absorbed. Such sales as are being made are small in number and size, and are generally consummated as a result of selling pressure rather than because of interest manifested by the buyer. There have been no large sales of heavy melting steel. In that grade dealers are trading to fill old contracts at \$13 to \$13.25. Bids for railroad scrap are more in line with the market. The Rock Island recently received \$15.60 per gross ton, delivered, for miscellaneous rails. The St. Paul is advertising a list of 4000 tons.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton

Heavy melting steel.....	\$13.00 to \$13.50
Frogs, switches and guards, cut apart, and miscellaneous rails.....	14.50 to 15.00
Shoveling steel.....	12.00 to 13.50
Hydraulic compressed sheets.....	11.00 to 11.50
Drop forge flashings.....	9.00 to 9.50
Forged cast and rolled steel car wheels.....	16.50 to 17.00
Railroad tires, charging box size.....	17.50 to 18.00
Railroad leaf springs, cut apart.....	16.50 to 17.00
Steel couplers and knuckles.....	15.50 to 16.00
Coil springs.....	17.25 to 17.75
Low phosphorus punchings.....	16.00 to 16.50
Axle turnings, foundry grade.....	13.25 to 13.75
Axle turnings, blast fur. grade.....	9.00 to 9.50
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails.....	16.50 to 17.00
Steel rails, less than 3 ft.....	16.25 to 16.75
Iron rails.....	13.50 to 14.00
Cast iron borings.....	8.75 to 9.25
Short shoveling turnings.....	8.75 to 9.25
Machine shop turnings.....	6.25 to 6.75
Railroad malleable.....	16.50 to 17.00
Agricultural malleable.....	15.00 to 15.50
Angle bars, steel.....	15.00 to 15.50
Cast iron carwheels.....	14.50 to 15.00

Per Net Ton

No. 1 machinery cast.....	14.50 to 17.00
No. 1 railroad cast.....	15.50 to 16.00
No. 1 agricultural cast.....	15.50 to 16.00
Stove plate.....	14.00 to 14.50
Grate bars.....	13.50 to 14.00
Brake shoes.....	13.00 to 13.50
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms.....	18.75 to 19.25
Iron car axles.....	22.00 to 22.50
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	12.75 to 13.25
No. 2 railroad wrought.....	11.75 to 12.25
No. 1 busheling.....	9.75 to 10.25
No. 2 busheling.....	6.25 to 6.75
Locomotive tires, smooth.....	14.00 to 14.50
Pipes and flues.....	9.00 to 9.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops.....	4.15c.
Bands.....	3.65c.
No. 24 black sheets.....	3.95c.
No. 10 blue annealed sheets.....	3.50c.
No. 24 galvanized sheets.....	4.80c.
Standard railroad spikes.....	3.55c.
Track bolts.....	4.55c.
Structural rivets.....	3.60c.
Boiler rivets.....	3.70c.
Per Cent Off List	
Machine bolts.....	56 and 5
Carriage bolts.....	47 1/2
Coach or lag screws.....	55 and 5
Hot-pressed nuts, square, tapped or blank, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, tapped or blank, 3.75c. off per lb.	
No. 8 black annealed wire, per 100 lb.....	\$2.30
Common wire nails, base, per keg.....	2.05
Cement coated nails, base, per keg.....	2.05

New York

Rise in Fuel Market Gathers Momentum —Steel Specifications Off 10 Per Cent

NEW YORK, Oct. 26.—With the rise in fuel prices gathering momentum, the trade is watching for expected effects on the pig iron market. It is evident that so far, at any rate, melters have not been stampeded into the purchase either of pig iron or coke. Pig iron prices current in this district are substantially the same as last week. Although most eastern Pennsylvania producers are now holding to \$21.50, base furnace, for foundry iron, some late sales have been made at \$21. Furnaces generally, however, are chary about quoting on first quarter business in view of the uncertainty as to coke prices. One eastern Pennsylvania furnace which is not fully covered on contract for its coke requirements during this quarter has withdrawn from the pig iron market. According to a report from Boston, the Everett furnace has advanced its price to \$21, base, and is asking the full silicon differentials, whereas its former price of \$20.50, furnace, applied to No. 2 plain and No. 2X alike. The heavy movement of fuel to seaboard has resulted in a car shortage, which has already affected the operation of some foundries. Melters, who have grown accustomed to quick deliveries of pig iron, are beginning to find that larger stocks are necessary and in one or two cases have been threatened with shutdowns because of lack of metal. The embargoes which the railroads placed on the ports of Philadelphia and Baltimore are still in force, and fuel shipments are moving to those points only under special permits. With coke operators selling coal in preference to coke and with the prospects of advances in wages at the mines, the concern of furnaces regarding their future costs is genuine. Sales of pig iron by local brokers during the past week totaled about 10,000 tons. So far this week two sellers have already booked a total of 3100 tons, which may indicate an increasing pressure to buy. The New York Air Brake Co. has closed for 500 tons of malleable for its Watertown, N. Y., plant, in addition to the 1000 tons of foundry bought a week ago. The Worthington Pump & Machinery Corporation, New York, has closed against the inquiries for its Eastern plants, which totaled 2560 tons. About 7000 tons of iron is pending in inquiries now before the trade. Among new inquiries is one from Louis Sacks, Inc., Newark, N. J., for 700 tons of No. 2X and 500 tons of malleable for first half delivery.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$1.39 to \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25	\$22.89 to \$23.52
East Pa. No. 2X fdy., sil. 2.25 to 2.75	23.39 to 24.02
East Pa. No. 1X fdy., sil. 2.75 to 3.25	23.89 to 24.52
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	23.41 to 23.91
No. 2 plain fdy., sil. 1.75 to 2.25 (by barge, del'd alongside in lighterage limits, N. Y. and Brooklyn)	20.00 to 21.00
No. 2 Virginia fdy., sil. 1.75 to 2.25	27.54 to 28.04

Ferroalloys.—The first large inquiry for ferromanganese in some time is one for about 1500 tons for this year's consumption. The order has not yet been placed so far as can be learned. It develops that while the contract price for this alloy is \$88 to \$100, depending on the source, it would be practically impossible to make purchases, particularly of small lots, at this time at less than \$100. Some producers will not quote on any more business this year and indications point to a revision upward of contract prices for next year.

Finished Material.—Steel has been specified at a somewhat better rate in the past week than earlier in October. Some fourth-quarter contracts have been covered to the extent of 75 per cent on the average, and indications are that the carry over into next year will not be over normal. This is happening in the face of every intention of bringing stocks to even a lower

percentage of needs that recently has been the case and on the approach to the inventory season. Estimates put October's orders scheduled for rolling fully 10 per cent below the September rate. New buying is still relatively light and even large users of bars are covering only by light purchases. This is believed to be in part a program of holding back heavy contracting to get a price concession. Wire demand is sluggish and 2.45c., base, has been done on plain wire. Sheet specifying has picked up and good lots have been sold at 3.10c., base Pittsburgh, for black and 3.95c. for galvanized. Some effort is being made to establish production tin plate for next year at higher than \$5.50 a base box, with no lively expectation that there will be a change. Some railroad equipment activity in the week proved heartening but fabricated structural steel work was slow in being consummated.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Warehouse Business.—Demand for various products from stock continues moderate, and prices remain firm. The price and the gage used for a base on long terme

Warehouse Prices, f.o.b. New York

	Base per Lb.	
Plates and structural shapes.....	3.34c.	
Soft steel bars and small shapes.....	3.24c.	
Iron bars.....	3.24c.	
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.	
Cold-finished steel shafting and screw stock—		
Rounds and hexagons.....	4.00c.	
Flats and squares.....	4.50c.	
Cold-rolled strip, soft and quarter hard.....	6.25c.	
Hoops.....	4.49c.	
Bands.....	3.99c.	
Blue annealed sheets (No. 10 gage).....	3.89c.	
Long terme sheets (No. 24 gage).....	5.80c.	
Standard tool steel.....	12.00c.	
Wire, black annealed.....	4.50c.	
Wire, galvanized annealed.....	5.15c.	
Tire steel, 1½ x ½ in. and larger.....	3.30c.	
Smooth finish, 1 to 2½ x ½ in. and larger.....	3.65c.	
Open-hearth spring steel, bases.....	4.50c. to 7.00c.	
	Per Cent Off List	
Machine bolts, cut thread.....	40 and 10	
Carriage bolts, cut thread.....	30 and 10	
Coach screws.....	40 and 10	
Boiler Tubes—	Per 100 Ft.	
Lap welded steel, 2-in.....	\$17.33	
Seamless steel, 2-in.....	20.24	
Charcoal iron, 2-in.....	25.00	
Charcoal iron, 4-in.....	67.00	
	Discounts on Welded Pipe	
Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16
	Tin Plate (14 x 20 in.)	
	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
LXX.....	13.90	16.00
	Terne Plate (14 x 20 in.)	
IC—20-lb. coating.....	\$10.00 to \$11.00	
IC—30-lb. coating.....	12.00 to 13.00	
IC—40-lb. coating.....	13.75 to 14.25	
Sheets, Box Annealed—Black, C. R. One Pass	Per Lb.	
Nos. 18 to 20.....	4.15c.	
No. 22.....	4.30c.	
No. 24.....	4.35c.	
No. 26.....	4.45c.	
No. 28.....	4.60c.	
No. 30.....	4.85c.	
	Sheets, Galvanized	
	Per Lb.	
No. 14.....	4.50c. to 4.75c.	
No. 16.....	4.60c. to 4.85c.	
No. 18.....	4.75c.	
No. 20.....	4.90c.	
No. 22.....	4.95c.	
No. 24.....	5.10c.	
No. 26.....	5.25c.	
No. 28.....	5.40c.	
No. 30.....	6.00c.	

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

sheets have been revised in this district, effective Oct. 19. As in the case of black and galvanized sheets the base has been changed from No. 28 gage to No. 24 gage. The price of 5.80c. per lb. fixed on the new base represents a slight reduction on most gages.

Cast Iron Pipe.—Purchasing of pipe for water supply has passed into the usual seasonal dullness, with orders confined to small lots needed to complete contracts, and buying of gas pipe for spring delivery has not yet developed. Among current municipal inquiries is about 50 tons of 6-in. water pipe for the city of Providence, R. I. A contract for about 3000 tons of pipe is reported to have been let by the city of Baltimore, but the pipe, which will be purchased by the contractor, has not yet been placed. Saddle River, N. J., has awarded a contract for the installation of about 1500 tons of 6-in to 12-in. pipe, and the contractor is understood to have purchased Universal pipe. Action on the 10,000 tons of cast iron pipe for the city of New York was again delayed by the Board of Estimate and Apportionment at its meeting last Thursday, with the decision to bring the matter up at the board meeting on Nov. 4.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$49.60 to \$52.60; 4-in. and 5-in., \$54.60 to \$57.60; 3-in., \$64.60 to \$67.60; with \$5 additional for Class A and gas pipe.

Old Material.—All grades of scrap are quiet with the possible exception of blast furnace material. Purchases in the past fortnight by one large consumer of 15,000 to 20,000 tons of borings and turnings for delivery to Sparrows Point, Md., Steelton and Bethlehem, Pa., have resulted in more activity in this grade, but prices show no tendency to advance. Brokers are offering \$13 per ton, delivered Sparrows Point or Steelton, and \$12.50 per ton, delivered Bethlehem. A Lebanon, Pa., consumer of specification pipe has purchased a small tonnage at \$14.50, and brokers are offering \$14 per ton, delivered, or about \$10.25 per ton, New York. Cast borings are going forward to a Birdsboro consumer at \$13.50 per ton, delivered. No. 1 heavy melting steel continues inactive, with brokers offering \$15.50 per ton, delivered Bethlehem or Conshohocken, Pa. For yard steel \$14 per ton, delivered Pottsville, is quoted.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.50 to \$10.25
Heavy melting steel (railroad or equivalent).....	12.25 to 12.85
Rails for rolling.....	12.50 to 13.00
Steel car axles.....	19.25 to 19.75
Iron car axles.....	23.50 to 24.50
No. 1 railroad wrought.....	14.00 to 15.00
Forge fire.....	9.50 to 10.00
No. 1 yard wrought, long.....	13.00 to 14.00
Cast borings (steel mill).....	9.50 to 10.00
Cast borings (chemical).....	13.00 to 13.50
Machine shop turnings.....	9.25 to 9.75
Mixed borings and turnings.....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.75 to 10.25
Stove plate (steel mill).....	9.50 to 10.00
Stove plate (foundry).....	11.00 to 11.50
Locomotive grate bars.....	10.50 to 11.00
Malleable cast (railroad).....	16.00 to 16.50
Cast iron carwheels.....	12.00 to 13.50
No. 1 heavy breakable cast.....	12.00 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.).....	14.00 to 14.50

Coke.—Foundry and furnace coke consumers are seeking to cover their requirements for the rest of this year, and in the present state of the market are encountering considerable difficulty in obtaining even a few carload lots. Numerous users of furnace grade in this district are reported still uncovered, including some of the large smelters. Foundry consumers are able to purchase occasional carloads, with as high as \$6 per ton, Connellsville, paid and a further advance expected. Furnace coke prices apparently range from \$4.75 to \$5.25 per ton, Connellsville, with \$5.50 per ton considered a possible price in the next few days. By-product prices are unchanged as yet, but pressure for carload lots from consumers without contracts is growing, and some increase would not be unexpected. The current quotation is \$9.50 to \$10.77, delivered Newark or Jersey City, N. J.

Philadelphia

Basic and Low Phosphorus Pig Iron Advance—Coke Situation Tight

PHILADELPHIA, Oct. 26.—Rising prices of coke during the past week have been reflected in higher pig iron prices, which have definitely advanced 50c. a ton. The base grade of foundry now has become established at \$21.50, furnace, while basic is quoted at \$21 to \$22, delivered, and low phosphorus iron at \$23.25 for copper-free and at \$24 for copper-bearing material.

Coke consumers in this district are being asked from \$4.25 to \$4.50, Connellsville, for furnace fuel, with indications that unless the British strike is settled soon, even higher prices may be asked. No quotations are being made for first quarter coke contracts. The increase during the past week has been \$1 a ton. With the Connellsville freight rate on coke at \$3.53, fuel delivered in this district is now costing the blast furnace operator as high as \$7.83, and not only this immediate situation but prospects for still higher prices in the future have left the pig iron maker in a state of uncertainty as to making commitments. Should the British strike be settled soon, however, and should shipments of coal abroad be cut off or pared down greatly, a sharp recession in coke prices is expected. The fact that some British interests are asking for quotations on American coal for January delivery leads to the belief that they feel that the strike may continue for a long period, though they are understood to be insisting on a saving clause, by which they may cancel the contracts by paying a minimum amount for protection. The insistent demand for coal, together with attractive prices, has led coke operators to allow oven capacity to stand idle and to ship coal direct instead so that the supply of coke has been held down.

The finished steel market is moving along at a fair rate, with no large orders being booked, but with a fairly continuous inflow of new business and specifications against contracts. The scrap market is easier in several grades. There are no important transactions and on the whole the market is marking time.

Pig Iron.—With prices of pig iron from all furnaces now up 50c. a ton for last quarter delivery, foundry iron has become established at \$21.50, base furnace. Basic is quoted at \$21 to \$22, copper-bearing low phosphorus iron at \$24, and copper-free iron at \$23.25 to \$23.75, furnace. The higher levels for foundry and basic iron, which have been maintained for some time by most furnaces in this district, have become firm on account of the rising prices of coke, which have advanced \$1 for furnace fuel. One steel works interest has advanced prices both of foundry and basic iron \$1 a ton for first quarter delivery, but has taken no business at the higher levels. This makes the price of this producer \$22.50, furnace, for the base grade of foundry iron. Foreign demand for coal has created an insistent demand for ships, and this is an important factor in tightening the market for low phosphorus iron. It has cut off imports of low phosphorus iron ore and this, together with difficulty in getting coke for making this grade of iron, has made it impossible for furnaces dependent on these sources for raw material to resume production. Only one blast furnace in the United States, situated in this district, is making low phosphorus iron. Others are either down for lack of raw material, or for repairs, and some which intermittently make this grade of iron are producing basic or foundry grades. The demand for low phosphorus iron is strong, and in the face of disappearing stocks, it is proving a problem for melters to get tonnage. Makers of this iron are not quoting for first quarter shipment. It is understood that one furnace in the western Pennsylvania district, now down for repairs, will resume low phosphorus iron production next month. Indicative of demand for low phosphorus iron is an inquiry for 1000 to 2000 tons from England, which ordinarily supplies tonnage to this country. Also, a steel works interest which at times makes this grade of iron is asking for a round tonnage. Another inquiry

calls for 1000 tons of copper-bearing iron, on which a quotation of \$24, furnace, was made. A Chicago district consumer is inquiring for 500 tons, on which a quotation of \$25, furnace, was made. A consumer in the Reading, Pa., district, has put out an inquiry for an unstated amount of No. 2 plain and No. 2X foundry iron for first quarter delivery. Ordinarily this consumer uses about 2000 tons of iron during that period.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.76 to \$22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X.	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.	21.00 to 22.00
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	23.25 to 23.75
Copper bearing low phos. (f.o.b. furnace)	24.00

Ferromanganese.—Makers of ferromanganese in this district have not yet opened their books for first quarter business. They believe that prices will rise, and therefore are not committing themselves at prevailing prices beyond the last quarter. Quotations for the latter shipment continue to range from \$88 to \$95, furnace. Buying is extremely light, consisting of car lots, but specifications against contracts are good. One maker has received an inquiry from a consumer for his entire 1927 requirements. This is taken to indicate that the buyers expect higher prices in the near future. Interest is being shown in the effect of the Armenian quake on prices of manganese ore and therefore of the manufactured alloy. Reports have been published that the port of Batoum, on the Black Sea, from which manganese ore is shipped, was badly damaged.

Plates.—Demand for plates is only moderate, but the price of 1.90c., Pittsburgh, is holding. Railroads and miscellaneous consumers are placing orders for immediate requirements, while jobbers are taking practically no tonnages. Deliveries range from 10 days to four weeks.

Shapes.—Structural steel business is rather light, with prices ranging from 1.90c. to 2c., Pittsburgh. Several small contracts have been taken by fabricators, but few large jobs are pending. Samuel Campbell was the lowest bidder for the general contract for Penn's Neck bridge, Salem, N. J., which will require about 850 tons of steel.

Bars.—Mills report a fair volume of new business for steel bars during the past week, a considerable amount coming from the railroads. Specifications are good. The prices of 2c. for carlots and 2.10c., Pittsburgh, for less than carlots are being maintained by some producers, while others are asking 2c. for 100-ton lots, or more, and 2.10c. for less than 100 tons.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¼-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ½-in.	3.00c. to 3.20c.
Structural shapes	2.75c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c. to 3.20c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished.	4.30c.
Reinforcing steel bars, square, twisted and deformed.	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ½-in. inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 24 black sheets	4.35c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	5.30c.
Diamond pattern floor plates—	
¼-in.	5.30c.
½-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.60c.

Sheets.—Demand for sheets is only moderate. Makers are quoting galvanized at 3.95c., base Pittsburgh; black at 3.10c., base Pittsburgh, and blue annealed at 2.40c., Pittsburgh. Concessions are still being made, but not so freely as they have been.

Imports.—Receipts of pig iron at Philadelphia last week continued very small, only 100 tons having come in, all from the Netherlands. Other imports were: Structural steel, 451 tons, of which 311 tons came from Belgium and 140 tons from Germany; steel blooms from Germany, 411 tons; cast iron pipe from Belgium, 618 tons, and chrome ore from Portuguese East Africa, 518 tons.

Old Material.—The market for scrap is lagging. Little interest is being shown either by the dealer or melter. A number of grades have declined 50c. No recent test has been made of the market for No. 1 heavy melting steel, and it is therefore still quoted at \$16.50. Yards have on hand material which was purchased at prices above those now being quoted. The stronger tone of the market for pig iron has led to speculation as to its possible effect on the scrap market. A fair-sized tonnage of stove plate was bought by a consumer in this district last week at \$13.50, but since then this grade has declined to \$13. Other grades that are down include low phosphorus material, bundled sheets, machine shop turnings, and cast borings.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	\$16.50
Scrap rails	16.50
Steel rails for rolling	\$17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 21.00
Couplers and knuckles	18.50 to 19.00
Rolled steel wheels	18.50 to 19.00
Cast iron carwheels	17.00 to 17.50
No. 1 railroad wrought	17.00 to 17.50
No. 1 forge fire	13.50 to 14.00
Bundled sheets (for steel works)	13.00
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00
Machine shop turnings (for rolling mill)	13.00 to 13.50
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill)	13.00 to 13.50
Cast borings (for chemical plant)	16.00 to 16.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	13.50
Stove plate (for steel works)	13.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.00 to 14.50
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

Cleveland

Steel Demand from Automobile Industry Still Receding—Large Boat Inquiries

CLEVELAND, Oct. 26.—There has been further slowing down in the demand for steel, which seems due almost entirely to the slackening in the automotive industry. Business from sources not directly or indirectly affiliated with the automotive industry is keeping up to around recent volume. The slump in automobile production has resulted in a rather sharp decline in the demand for steel bars from motor car builders, forge shops and other parts manufacturers. Automobile builders are understood to have very low inventories, so that when they are able to increase production, it is expected to be reflected quickly in a better demand for steel.

Plates are less active than they were, although they are moving fairly well in small lots. However, light plates are suffering from the automobile slump, and one Ohio steel plant has shut down a mill on which it makes frame stock. Structural material is moving in about the usual volume for this season, although little new building work is coming out in this territory.

The ordering of one boat and a new inquiry for two others gives the ship-building industry a good outlook for the winter. The Interlake Steamship Co. has ordered a freight boat, requiring 5000 tons of steel. For this boat 1400 tons of structural material will be supplied by the Bethlehem Steel Co., and the 3600 tons of plates will be divided about equally between that

company and the Youngstown Sheet & Tube Co. The new inquiry is for two large Lake freighters, requiring 5000 tons of steel each. An inquiry is out for 500 tons of plates for tanks for a sanitarium to be built in Cleveland by H. H. Timken, Canton, Ohio.

The steel bar market remains at 2c., Pittsburgh, in this territory, as outside mills are holding to that price and a local mill which has quoted 2c., Cleveland, is not yet under production. It is reported that quotations of 1.90c., Cleveland, have been made in some cases. Plates are apparently holding firm at 1.90c., Pittsburgh, and structural material at 2c.

Pig Iron.—The recent advance in pig iron prices has not had the effect of driving consumers into the market for the first quarter, and they do not seem concerned over the possibility of having to pay an advance for iron of that delivery. However, a moderate volume of business continues to come out, although sales the past week were not so large as during the previous week. About half the tonnage booked was for delivery during the remainder of the year. In view of the fuel situation the market generally has a firm tone. However, on early shipment orders there is still some shading from the generally quoted prices for business at competitive points. While Cleveland furnaces during the week sold some foundry iron at \$18.50, their usual asking price for outside shipment, this price was shaded on at least one sale to \$18.25, Cleveland. Where the competition is keen the price of \$18, Valley, has not disappeared, although most producers are adhering to an \$18.50 basis. Prices on foundry and malleable iron are unchanged at \$19, furnace, in Western Ohio and Indiana and at \$19.50 to \$20, furnace, in Michigan. Several inquiries are pending for low phosphorus iron, the supply of which is scarce. With the curtailment in automobile production, shipping orders for pig iron have been reduced by some of the Michigan automobile companies. However, some of the stove and boiler manufacturers have increased their shipping orders, and agricultural implement makers are taking considerable iron. The Stewart Iron Co. plans to blow in its furnace at Sharon, Pa., on low phosphorus iron about Dec. 1.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio slivery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace	\$18.00
Northern No. 2 fdy., all 1.75 to 2.35	20.00
Southern fdy., all 1.75 to 2.25	24.01
Malleable	20.00
Ohio slivery, 8 per cent.	30.52
Standard low phos., Valley furnace	28.00

Iron Ore.—A Lake steel plant has just purchased 100,000 tons of ore, which will probably be the last round lot to be bought for this season's delivery. The consumption of Lake ore during September amounted to 4,737,812 tons, as compared with 4,796,187 tons during August. The decrease of 58,375 tons is due to the shorter month. In September last year 4,010,826 tons of Lake ore was used. The amount at furnaces Oct. 1 was 30,438,269 tons, and the total at furnaces and Lake Erie docks on that date was 37,335,619 tons, as compared with 38,423,322 tons on the same date a year ago. Central district furnaces last month consumed 2,464,496 tons, a decrease of 27,034 tons as compared with August. Lake front furnaces consumed 2,035,607 tons, a gain of 93,902 tons. Eastern furnaces used 122,310 tons, a loss of 8515 tons, and all-rail furnaces consumed 115,399 tons, a loss of 68 tons. On Sept. 30 there were 186 furnaces in blast using Lake ore, a gain of one for the month.

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 24 black sheets	3.80c.
No. 10 blue annealed sheets	3.25c.
No. 24 galvanized sheets	4.65c.
No. 9 annealed wire, per 100 lb.	\$2.00
No. 9 galvanized wire, per 100 lb.	3.45
Common wire nails, base, per keg	3.00

Semi-Finished Steel.—Specifications have slowed down somewhat, and there is no new demand.

Sheets.—There has been some curtailment in sheet mill operations due to the slowing down in the demand from the automotive industry, and a few of the mills have got near enough to the end of their orders to show anxiety for additional business. However, a number of the mills are comfortably filled for November. Automobile companies continue to place specifications, but in considerably reduced volume. Outside of the automotive field, sheets are still moving in fair volume. Metal furniture sheets are in good demand, as are single pickled sheets for small stampings. Consumers are buying from hand to mouth and want quick shipments. The market does not have the firmness that it showed for several weeks, this being indicated by the willingness of more of the producers to meet the lower quotations in the recent range of prices. Minimum quotations are 3c., Pittsburgh, for black sheets, 2.30c. for blue annealed, and 3.85c. for galvanized. No weakness has developed in automobile body sheets, although the greatest slump in demand has been in this grade.

Strip Steel.—Competition in cold-rolled strip is very keen, and the decline in the demand from the automotive field is likely to lead to a reduction in output. The more common range in prices is 3.25c. to 3.40c., Cleveland. Hot-rolled strip steel for cold-rolling mills has settled down to 2.10c., Pittsburgh, for wide and 2.20c. for narrow material, but regular quotations are being closely maintained to other consumers.

Coke.—With coal prices soaring, the production of beehive coke is being curtailed, as many coke operators are selling their coal instead of turning it into coke. Some of the union mines in Ohio which had been long shut down because they could not meet the competition of the non-union mines in West Virginia are starting up. The increased output, together with the shutting off shortly of water shipments of coal into the Northeast, is expected to furnish considerable relief to the present fuel situation that has been created by the heavy demand for coal for shipment to England. Prices have advanced further. Connellsville foundry coke is quoted at \$4.50 to \$5.50, ovens, for prompt shipment, and few producers are naming contract prices. Heating coke, for which an active demand has developed, ranges from \$3.75 to \$4, ovens.

Bolts, Nuts and Rivets.—While the demand for bolts and nuts from the automotive industry has fallen off, business from other sources is holding up well. Local manufacturers are holding to regular discounts. The demand for rivets, particularly from the railroads, has improved, and local makers report that their October business will show a gain over that of September.

Old Material.—The market still shows a downward tendency in many grades. A Cleveland mill and a Valley district consumer held up shipments on heavy melting steel during the week. There is a limited demand from dealers for this grade, for which they are paying \$14.75. A local mill bought a small lot of blast furnace scrap the past week at \$11.75, but this grade is now 25c. a ton lower and some purchases have been made by dealers at \$11.25. Low phosphorus scrap is down 50c. A sale of 1500 tons of sheet bar crops was made at \$18. November lists sent out by some of the Detroit automobile companies are much smaller than a month ago, reflecting the curtailment in automobile production.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel	\$14.50 to \$14.75
Rails for rolling	16.25 to 16.50
Rails under 3 ft.	16.75 to 17.25
Low phosphorus billet, bloom and slab crops	18.50 to 19.00
Low phosphorus sheet bar crops	18.00 to 18.50
Low phosphorus plate scrap	18.00 to 18.50
Low phosphorus forging crops	16.75 to 17.25
Cast iron borings	11.25 to 11.50
Machine shop turnings	9.25 to 9.50
Mixed borings and short turnings	11.25 to 11.50
Compressed sheet steel	13.50 to 14.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	14.75 to 15.00
Railroad malleable	16.75 to 17.25
Light bundled sheet stampings	12.00 to 12.50
Steel axle turnings	12.50 to 13.00
No. 1 cast	16.50 to 17.00
No. 2 bushing	11.25 to 11.50
Drop forge flappings, 15 in. and under	11.50 to 12.00
Railroad grade bars	12.50 to 13.00
Stove plate	12.50 to 13.00
Pipes and flues	10.00 to 10.50

San Francisco

Week's Plate Lettings Exceed 7750 Tons —Imports of Steel Continue

SAN FRANCISCO, Oct. 23 (*By Air Mail*).—Activity in plates has been the outstanding feature of the week's business. Plate lettings exceed 7750 tons, and fresh inquiry calls for nearly 10,000 tons. The largest individual award, 5900 tons, for syphons for the Southern California Edison Co., Los Angeles, was divided as follows: 3500 tons to the Western Pipe & Steel Co., and 1200 tons each to the Lacy Mfg. Co. and the Llewellyn Iron Works. The Western Pipe & Steel Co. also took 1850 tons for a penstock for the city of Los Angeles.

Plans and specifications have been prepared by the city engineer of Yakima, Wash., for a water system and 15 miles of pipe line, for which 6000 to 10,000 tons of plates will be required. Bids will be called for soon. About \$1,500,000 worth of bonds were voted recently for this work and for the purchase of the present system operated by the Pacific Power & Light Co. The San Joaquin River Water Storage District, Los Banos, Cal., is expected to set a date soon for a referendum on a bond issue of \$24,000,000. Of this amount it is proposed to use \$11,000,000 for the purchase of water rights and physical properties, and \$13,000,000 for the construction of the proposed Friant dam, power houses, canals, drainage systems, etc. The project embraces 500,000 acres of land in Madera, Merced, Fresno and Stanislaus counties. The Tulare Lake Basin Water Storage District, Corcoran, Cal., has been formed for the irrigation and reclamation of about 170,000 acres of land near Corcoran. It is expected that a referendum will be held by this district in the near future to vote on a bond issue of about \$4,000,000 for the proposed construction of a reservoir, levees, pumping plants, etc.

The importation of foreign steel continues. Since the first part of October an aggregate of 2171 tons of foreign steel has come in at this port. Of this amount 1921 tons consists of soft steel bars and light structural material of Belgian and German origin, and 350 tons is Swedish drill steel.

Pig Iron.—Little of importance has come up during the week. Current sales are restricted to small lots. Quotations are unchanged.

	Per Gross Ton
*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25 ..	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25 ..	25.00
**German foundry, sil. 2.75 to 3.25 ..	24.25

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Fabricated structural lettings for the week total 993 tons, and fresh inquiry calls for 225 tons. Several jobs are pending on which bids have closed. Awards calling for small tonnages are numerous. The largest individual letting, 450 tons, for a theater in Hollywood, Cal., was placed with the Pacific Rolling Mill Co., San Francisco. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—A number of fresh inquiries have come out during the week. Vancouver, B. C., is taking bids on 1100 tons for a pipe line; the Washington Water Power Co., Spokane, Wash., is taking bids on 1200 tons for its Lake Chelan project; the Associated Oil Co., Los Angeles, has come into the market for 620 tons for tank work, and the city of Yakima, Wash., is expected to ask for bids soon on 6000 to 10,000 tons for a municipal

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, 3/4-in. to 2 1/4-in.	3.90c.
Spring steel, 3/4-in. and thicker	5.00c.
No. 24 black sheets	4.90c.
No. 28 black sheets	5.15c.
No. 10 blue annealed sheets	4.00c.
No. 24 galvanized sheets	5.65c.
No. 28 galvanized sheets	6.15c.
Common wire nails, base per keg	\$3.75
Cement coated nails, 100-lb. keg	3.75
Cement coated nails, count kegs	3.00

pipe line. Individual lettings calling for less than 100-ton lots have been numerous. Estimated total lettings for the week probably aggregate over 8000 tons. Eastern mills continue to quote plates at 2.30c., c.i.f. Coast ports.

Bars.—Local jobbers have booked 2427 tons of reinforcing bars during the week. The largest individual job, 1502 tons, for Pier 45 on the San Francisco water front for the State Board of Harbor Commissioners, was taken by the W. S. Wetenhall Co., San Francisco. Local competitive conditions, and the low asking prices that are still being named on foreign bars, continue to prevent the strengthening of quotations on domestic steel. Local jobbers' minimum quotations on domestic concrete bars range from approximately 2.30c. to 2.45c., base, per lb., on lots of about 200 tons. Foreign reinforcing steel is quotable at 1.95c. to 2c., base, per lb., duty paid, c.i.f. Coast ports, on round tonnages. Smaller lots, from warehouse stocks, are understood to have been offered during the week at about 2.10c. and less.

Cast Iron Pipe.—The city of Wenatchee, Wash., is taking bids through contractors on 200 to 300 tons of cast iron pipe for water mains, on which lettings are expected to be made during the coming week. B. Nicoll & Co. are low bidders on 281 tons of 16-in. Class B pipe for the city of Huntington Park, Cal., and have been awarded 131 tons of 4, 6 and 8-in. Class B pipe by the city of San Diego, Cal., and 234 tons of 4 and 6-in. Class B pipe by the city of Los Angeles. Seattle, Wash., has placed 250 tons of 4, 6 and 8-in. Class B pipe for Water District No. 20 with an unnamed firm, and the city of Tacoma, Wash., has awarded 120 tons of 8 and 24-in. Class B pipe for its North End reservoir to an unidentified interest. Quotations are firm at \$50 base, water shipment, San Francisco.

Steel Pipe.—The Grinnell Co. of the Pacific has been awarded 360 tons of 6-in. welded steel pipe by the city of Los Angeles.

Warehouse Business.—Jobbers complain of hand-to-mouth buying and of the disinclination of customers to specify for more than their immediate requirements. Quotations are unchanged.

Rails and Track Supplies.—The Los Angeles Water and Power Commission is taking bids on about 1000 tons of girder rails, required under Specification P. A. Adv. P-673.

Coke.—The Southern Pacific Co., San Francisco, is inquiring for 1000 tons of by-product coke. One local importer of German fuel is understood to have quoted on a certain inquiry during the week at about \$1 per net ton higher than the present market, which has remained unchanged for several weeks at about \$12 to \$12.50 per net ton at incoming dock. Fresh shipments from Europe are expected to arrive here early in November.

Birmingham

Pig Iron Output Lower but Two Furnaces Are Ready to Go In

BIRMINGHAM, Oct. 26.—With production of pig iron reduced, inroads are being made into surplus stocks of foundry iron on furnace yards, and indications are that by the end of the month deliveries will exceed output. The market is unchanged at \$20 per ton, Birmingham, for No. 2 foundry. Furnaces show no interest in inquiries calling for deliveries next year, since they believe that higher prices are in sight. Ten blast furnaces are still producing foundry iron in this State, an equal number is on basic, and one is on special iron. One furnace with a rated daily capacity of 400 tons is ready for the torch, and a second one of about the same capacity will be ready within 30 days. Three other furnaces are in shape to resume operation whenever demand justifies it. The two first named will be making iron before the expiration of the year.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$20.00
No. 1 foundry, 2.25 to 2.75 sil.	20.50
Basic	20.00
Charcoal, warm blast	30.00

Rolled Steel.—There are no indications of a lagging steel market either in the volume of new business or fresh inquiries. Open-hearth operations are as active as at any time this year. Plates and sheets continue in good demand and rails and track accessories are being purchased in good volume. Mills and shops making the latter products have bookings warranting steady operations for several months to come. Local fabricating shops also have considerable work on hand. The Southern Steel Co. has completed the framework for a new cast house for the Sloss-Sheffield Steel & Iron Co.'s No. 2 blast furnace. The Ingalls Iron Works has the fabricating contract for a three-story mercantile establishment in the business section of Birmingham and is rushing the completion of 900 tons of steel work for the Tennessee-Terrace Hotel at Knoxville, Tenn.; for a grand stand at the St. Augustine, Fla., race track, and for buildings for the Western Paper Co. in Georgia and Florida. The Birmingham Tank Co. has recently booked several contracts, including four large-size tanks for a cottonseed oil mill at Savannah, Ga. Structural shapes and bars are unchanged at 2.15c. to 2.25c., base Birmingham; plates at 2.05c. to 2.15c.; No. 10 blue annealed sheets at 2.60c. to 2.70c., and No. 24 black sheets at 3.30c. to 3.40c. No. 24 galvanized sheets have advanced \$1 a ton, now ranging from 4.20c. to 4.30c., Birmingham.

Cast Iron Pipe.—With all cast iron pressure pipe shops in full operation and shipments equal to production, new business is falling off. Backlogs are said to be sufficient, however, to warrant steady operations for some time. No change has been made in the base price of \$39, Birmingham, for 6-in. and larger sizes. Trade in soil pipe and fittings is still slow, though some of the larger shops are operating well.

Coke.—New business is not active. Inquiry, however, is heavier. Quotations center on \$5.50, Birmingham, for foundry coke. Little spot, which is quoted at \$3, is being sold. Production is being maintained, and considerable tonnage is still leaving this territory.

Old Material.—New buying is limited. Orders in hand will keep dealers busy through the remainder of the year and in some instances longer. Despite heavy buying of some classes of scrap, prices have remained stationary. Heavy melting steel is still held at \$13 to \$14.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel	12.00 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	17.00 to 18.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.00 to 17.00
Carwheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings.....	7.50 to 8.00
Cast iron borings	7.50 to 8.00
Rails for rolling	15.00 to 16.00

Toronto

Pig Iron Demand Improves—Rail Business Is Factor—Scrap Spotty

TORONTO, ONT., Oct. 26.—Following the recent advance in the price of pig iron in the Canadian market, demand has become stronger. The higher prices have had a tendency to bring lagging melters into the market, with a result that a number of fairly large contracts were closed during the week on last quarter account while a few first quarter contracts have also been booked and inquiries have been received for iron as far ahead as next June. While some business has been taken for first quarter, a few Canadian producers do not appear anxious to close contracts beyond the end of the year. Spot demand has also picked up, and orders for lots ranging from 50 to 200 tons are appearing at frequent intervals.

An increase in the production of pig iron in Canada during the month of September was due almost entirely to the starting of rail mills at Sydney, N. S., and Sault Ste. Marie, Ont. It is unofficially reported

that the British Empire Steel Corporation has lately received a contract for rails from the Canadian National Railways. At all events there is said to be sufficient business on the books of the Sydney company to keep the mills there working until the end of January at about 70 per cent capacity.

Canadian pig iron prices are unchanged, as follows: No. 1 foundry (2.25 to 2.75 per cent silicon), \$25.30; malleable, \$25.30; No. 2 foundry, (1.75 to 2.25 per cent silicon), \$24.80, at Toronto, and No. 1 foundry and malleable, \$27.70, and No. 2 foundry, \$27.20, at Montreal.

Old Material.—Business is spotty. While sales for the past week were slightly better than those of the previous week, they are still much below expectations. The majority of consumers are interested in the market only in so far as their present needs are concerned, and buying on this account is comparatively light. Orders closed during the week were for such materials as heavy melting steel, turnings, machinery cast, malleable scrap and a few other lines, and the bulk of these was from buyers in the Hamilton, Ont., district. While demand is slightly better, the improvement has not been sufficient to warrant an advance in prices. Canadian dealers' buying prices are as follows:

	Toronto	Montreal
<i>Per Gross Ton</i>		
Steel turnings	\$8.50	\$8.00
Machine shop turnings.....	8.50	7.00
Wrought pipe	6.00	6.00
Rails	11.00	10.00
No. 1 wrought scrap.....	11.00	14.00
Heavy melting steel.....	11.00	9.00
Steel axles	16.00	17.00
Axles, wrought iron.....	18.00	19.00
Boiler plate	10.00	8.00
Heavy axle turnings.....	8.50	9.00
Cast borings	8.50	7.50
<i>Per Net Ton</i>		
Standard carwheels	15.00	16.00
Malleable scrap	14.00	14.00
Stove plate	10.00	13.00
No. 1 machinery cast.....	16.00	18.00

Boston

Pig Iron and Scrap Markets Are Quiet—Mixed Views on Prices

BOSTON, Oct. 26.—Comparatively little pig iron business was transacted in this territory the past week. It is reported the Pratt & Whitney Co., Hartford, Conn., has not covered on its inquiry for 500 tons of No. 1X. New inquiries include one for 200 tons of No. 2X from another Hartford foundry, 300 tons of No. 2X and No. 1X from a Providence, R. I., company, and 300 tons of No. 2X and No. 1X from a Worcester, Mass., firm. There is much speculation regarding future pig iron prices as a result of the large coal exports and the possibility of a bituminous coal strike next April. Sentiment is mixed. Representatives of Pennsylvania furnaces anticipate higher iron prices and are less anxious to take first quarter business. In contrast, others are bearish on prices owing to the lack of buy-

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled.....	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.00c.
Norway, rounds	6.00c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams.....	3.345c.
Tees	3.365c.
Zees	3.445c.
Plates	3.345c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	4.05c.
Squares and flats.....	4.55c.
Toe calk steel	6.00c.

ing. They also maintain there will be no strike provided the English coal situation remains unchanged, since American mine owners could ill afford to pass up a new agreement with the miners while foreign demand continues.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$6.91 to \$8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25....	\$25.15
East. Penn., sil. 2.25 to 2.75....	25.65
Buffalo, sil. 1.75 to 2.25.....	\$23.41 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.91 to 24.41
Virginia, sil. 1.75 to 2.25.....	27.92 to 28.42
Virginia, sil. 2.25 to 2.75.....	28.42 to 28.92
Alabama, sil. 1.75 to 2.25.....	26.91 to 28.77
Alabama, sil. 2.25 to 2.75.....	27.41 to 29.27

Coke.—The movement of by-product foundry coke from New England ovens continues to gather momentum. Most foundries are now anxious to stock ahead of weekly requirements. The market for such coke is firm at \$12 a ton, delivered, within a \$3.10 freight rate zone. The demand for domestic coke continues heavy.

Shapes and Plates.—Although not active, the fabricated steel market shows more life than earlier in the month. Most of the prospective jobs, however, call for less than 400 tons each. The 2000 tons for the Cambridge, Mass., bridge has not yet been awarded, and 1200 tons for a Masonic Temple, Providence, R. I., is still pending. The market for standard shapes is firm at 2c. per lb., base Pittsburgh. The demand for plates is decreasing rather than increasing, with consumers desiring to keep inventories down prior to Jan. 1. The market is holding well at 1.90c., base Pittsburgh, the quietness notwithstanding.

Cast Iron Pipe.—Attleboro, Mass., has awarded 100 tons of 6 and 8-in. pipe to the Warren Foundry & Pipe Co. There have been no other municipal lettings or prospective tonnages. Some of the largest Massachusetts gas companies are feeling out the market for next spring's requirements, and indications are this business will close much earlier than usual. Prices quoted openly on pipe are: 4-in., \$60.10 per net ton, delivered common Boston freight rate points; 6 to 12-in., \$55.10 to \$56.10; larger pipe, \$54.10 to \$55.10. The usual \$5 differential is asked on Class A and gas pipe.

Imports.—Pig iron imports at Boston in the first half of October totaled 1547 tons from the Continent, which compares with 320 tons in the first half of September, and 3267 tons in the first half of October, 1925. The Mystic Iron Works received 9902 tons of Newfoundland ore the first half of October.

Old Material.—Activity centers very largely in heavy melting steel, machine shop turnings and mixed borings and turnings. Buying by the Bethlehem Steel Co. is the sustaining market factor. The movement of other materials is at a minimum, and quotations are largely nominal. None of the scrap sold recently by New England railroads brought more than regular prices. The Boston & Maine Railroad yesterday closed bids on 90 cars of miscellaneous material.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$18.50 to \$19.00
No. 1 machinery cast	18.50 to 19.00
No. 2 machinery cast	16.50 to 17.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.00 to \$11.50
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought	11.00 to 11.50
Wrought pipe (1 in. in diameter, over 2 ft. long).....	10.50 to 11.00
Machine shop turnings.....	8.00 to 8.50
Cast iron borings, chemical.....	11.00 to 11.75
Cast iron borings, rolling mill.....	8.50 to 9.00
Blast furnace borings and turnings	8.00 to 8.60
Forged scrap	8.60 to 9.50
Bundled skeleton, long	8.50 to 9.00
Forged flashings	9.00 to 9.50
Bundled cotton ties, long.....	8.50 to 9.00
Bundled cotton ties, short.....	9.00 to 9.50
Shafting	16.50 to 17.00
Street car axles	16.50
Rails for rerolling	12.00
Scrap rails	11.00 to 11.50

Luria Bros. & Co., Inc., announce the removal of the Boston office to the Statler Building, Room 713, effective Nov. 1. M. B. Kafker is district manager.

Cincinnati

Lake Furnaces Press for Pig Iron Business—Coke Stronger—Scrap Dull

CINCINNATI, Oct. 26.—Lake furnaces again are actively soliciting business in this territory, having sold 500 tons of foundry and malleable iron to a local melter at from \$18 to \$18.25, base Cleveland. Southern Ohio sellers are refusing to meet such low prices and are advancing to \$20, base Ironton. An order from a Dayton, Ohio, consumer for 250 tons of foundry iron is understood to have been placed with a northern Ohio furnace. Lake interests are reported to have submitted quotations approximately \$1 to \$1.50 a ton below those of Ironton producers on 1000 tons of Northern foundry for the Anderson Stove Co., Anderson, Ind. Due to the uncertainty regarding continued competition from Lake furnaces in this territory and because of the upward trend in the price of coke, southern Ohio producers are not campaigning actively for first quarter business. The Jackson County silvery market is strong, and producers there are refusing to quote for delivery beyond Dec. 31. A Michigan melter has contracted for 500 tons of silvery. Both Alabama and Tennessee irons are firm at \$20, base Birmingham. A Cleveland company is inquiring for 200 to 300 tons of 7 per cent silvery, and a like amount of Southern iron. Otherwise inquiries are limited to small lots ranging from single carloads to 200 tons.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	\$23.69
(base)	24.19
Alabama fdy., sil. 2.25 to 2.75...	23.69
Tennessee fdy., sil. 1.75 to 2.25...	23.69
Southern Ohio silvery, 8 per cent	21.89
So. Ohio fdy., sil. 1.75 to 2.25....	\$21.89 to 20.89
So. Ohio malleable	20.89

Finished Material.—A further recession in specifications and orders has taken place in the past week. The volume of business this month has fallen considerably below that in September, and sellers are of the opinion that activity during the remainder of the year will be on a diminished scale. Buyers have carried over into the fourth quarter a large amount of material, and as the inventory period draws near it is expected that they will purchase only sufficient stock to meet immediate needs. It is known, however, that some consumers in this territory already are estimating their first quarter's requirements and that they will be liberal. At the moment the agricultural implement manufacturers are yielding little business, but prospects for sales to companies in that industry are promising. Railroad and electric railway buying is moderate in volume. Fabricators are fairly busy on old work, but new projects of consequence are scarce. An Ironton, Ohio, mill has just delivered a bargeload of nails to local jobbers. Bookings of nails at river points have been encouraging. Common wire nails are quoted at \$2.65 per keg, base Ironton or Pittsburgh, and plain wire at \$2.50 per 100 lb., base Ironton or Pittsburgh. Fresh orders for sheets have tapered, but prices are steady. Small lots of galvanized and black sheets have

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes.....	3.40c.
Bars, mild steel or iron.....	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
No. 24 black sheets.....	4.05c.
No. 10 blue annealed sheets.....	4.60c.
No. 24 galvanized sheets.....	4.90c.
Structural rivets.....	2.75c.
Small rivets.....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg.....	3.15
Chain, per 100 lb.....	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.	39.00

been taken at the new schedule of 3.95c. and 3.10c., base Pittsburgh, respectively. Blue annealed sheets are bringing 2.40c., base Pittsburgh. The bar market is firm at 2c., base Pittsburgh, but sales have been only fair. Tank plates are showing strength at 1.90c., base Pittsburgh, and structural shapes remain at 2c., base Pittsburgh.

Reinforcing Bars.—Joseph T. Ryerson & Son, Inc., will furnish 1200 tons of bars for the fourth section of Central Parkway, to be constructed by the Cincinnati Rapid Transit Commission. An award of 500 tons for new buildings for E. Kahn & Sons, Cincinnati, was divided between the Pollak Steel Co. and another producer. In addition, there are several sizable tonnages which probably will be let during the coming week. New billet bars remain at 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

Warehouse Business.—Sales in October have shown a substantial increase over those in September. Structural steel, bars and sheets are in good demand, but tank plates are weak. There is a steady call from local machine tool manufacturers for cold-rolled products. Prices are firm.

Coke.—Local dealers are having difficulty in obtaining beehive coke from the New River and Wise County districts, because producers there have curtailed coke operations and are shipping coal to tidewater for export. Prices of Wise County foundry and furnace grades nominally are \$5.50 to \$6, ovens, and \$4.50 to \$5, ovens, respectively. The Portsmouth By-Product Coke Co. has announced an advance of 50c. a ton on by-product foundry coke for November, the new price being \$7.50, ovens, or \$9.64, delivered Cincinnati. Domestic grades will remain unchanged, with No. 2 nut at \$5, ovens, and egg and walnut at \$5.50. Other by-product sellers have not determined upon November prices, but foundry grades probably will continue at \$7.50, ovens. Shipments of by-product foundry coke in October have shown a small gain over those in September.

Based on freight rates of \$2.14 from Ashland, Ky., \$3.53 from Connellsville, and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, \$8.03 to \$8.53; Wise County foundry, \$8.09 to \$8.59; New River foundry, \$10.09; by-product foundry, \$9.64.

Old Material.—The market is sluggish. Mills in the South are decreasing their specifications against contracts, while steel plants in this district are well supplied with material for their immediate requirements. Consumers are ready to buy stock at low prices, but dealers are declining to sell on that basis. Although quotations on all items have not changed, they are tending toward lower levels.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$12.50 to \$13.00
Scrap rails for melting	12.50 to 13.00
Short rails	17.50 to 18.00
Relaying rails	26.50 to 27.00
Rails for rolling	14.00 to 14.50
Old carwheels	12.00 to 12.50
No. 1 locomotive tires	16.50 to 17.00
Railroad malleable	14.50 to 15.00
Agricultural malleable	13.50 to 14.00
Loose sheet clippings	7.00 to 7.50
Champion bundled sheets	8.50 to 9.00
Per Net Ton	
Cast iron borings	6.50 to 7.00
Machine shop turnings	6.00 to 6.50
No. 1 machinery cast	17.00 to 18.00
No. 1 railroad cast	14.00 to 14.50
Iron axles	19.50 to 20.00
No. 1 railroad wrought	9.00 to 9.50
Pipes and flues	7.50 to 8.00
No. 1 busheling	9.00 to 9.50
Mixed busheling	5.50 to 6.00
Burnt cast	6.50 to 7.00
Stove plate	9.00 to 9.50
Brake shoes	9.50 to 10.00

Sales of oak leather belting reported by the Leather Belting Exchange, Philadelphia, for the week ended Oct. 2 amounted to 76,624 lb., valued at \$128,805, comparing with 87,110 lb. for the preceding week, valued at \$143,122, and 85,582 lb. for the corresponding week of 1925, valued at \$147,972.

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 24 black sheets	4.45c.
No. 10 blue annealed sheets	3.40c.
No. 24 galvanized sheets	5.25c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
Per Cent Off List	
Tank rivets, $\frac{3}{8}$ -in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

St. Louis

Stove Foundries Operate at Capacity—Structural Projects in South Held Up

ST. LOUIS, Oct. 26.—Sales of pig iron during the last week, mostly by the local maker, amounted to about 4000 tons, including 1000 tons for an Illinois stove foundry and two lots of 500 tons each to local job foundries. These were for shipment through last quarter and into the first quarter. The only inquiry of importance pending is for 300 to 500 tons for an upper Illinois stove plant. Stove foundries are now working to 100 per cent capacity, and in the Belleville district a strike of enamellers has not retarded production. Not much interest is being shown in first quarter requirements. Some melters believe prices will be lower, because of increased production at the Granite City works and keener competition from Chicago and Southern furnaces. Prices are nominally unchanged.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.43 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$22.16
Northern malleable, sil. 1.75 to 2.25	22.16
Basic	22.16
Southern fdy., sil. 1.75 to 2.25...	24.43
Granite City iron, sil. 1.75 to 2.25	\$21.81 to 22.21

Finished Iron and Steel.—The cotton crisis in the South is being reflected in a falling off in business from that section, according to reports from mills and warehouses alike. Some contemplated projects in the cotton-growing territory are being held up pending further developments. No building projects of size are pending here and local structural steel and reinforcing bar interests are anxious for business.

Coke.—By-product coke ovens in this district are well sold on foundry grades, and consumers who have not contracted for their requirements are looking elsewhere for supplies. Improvement is being shown in the demand for domestic grades.

Old Material.—Continued lack of interest by consumers has caused further weakness in the market, and declines of 25c. to 50c. a ton were recorded on some items during the week. Dealers are buying only spot cars, which are being delivered against expiring contracts. Occasional bargains are picked up and laid down in the dealers' yards, but it is stated that they will not buy generally for stock until there is a further decline. Yard stocks are low. Relaying rails, of 70 to 90 lb. in weight, are in good demand, but the lighter weights are not wanted. Railroad lists include: New York Central, 6000 tons of relaying rails of various weights; Chicago, Burlington & Quincy, 5000 tons; Chicago, Milwaukee & St. Paul, 4600 tons; Louisville & Nashville, 1300 tons of relaying rails; St. Louis-San Francisco, 1000 tons; Missouri Pacific, 350 tons, and

Terminal Railroad Association of St. Louis, a number of old locomotives.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$18.50 to \$11.00
Rails for rolling	15.75 to 14.25
Steel rails less than 1 ft.	14.50 to 12.00
Relaying rails, 40 lb. and under	20.50 to 23.50
Relaying rails, 70 lb. and over	24.50 to 29.00
Cast iron car wheels	15.25 to 15.75
Heavy melting steel	13.00 to 13.50
Heavy shoveling steel	13.00 to 13.50
Frogs, switches and guards cut apart	14.50 to 15.00
Railroad springs	17.25 to 17.75
Heavy axle and tire turnings	10.50 to 11.00
No. 1 locomotive tires	16.00 to 16.50
Per Net Ton	
Steel angle bars	12.50 to 11.00
Steel car axles	18.00 to 18.50
Iron car axles	21.00 to 21.50
Wrought iron bars and transoms	18.50 to 19.00
No. 1 railroad wrought	11.75 to 12.25
No. 2 railroad wrought	11.50 to 12.00
Cast iron borings	9.00 to 9.50
No. 1 busheling	10.00 to 10.50
No. 1 railroad cast	14.50 to 15.00
No. 1 machinery cast	14.50 to 15.00
Railroad malleable	12.25 to 12.50
Machine shop turnings	6.50 to 7.00
Bundled sheets	7.50 to 8.00

Buffalo

Pig Iron Demand Diminishes—Sheet Mills Run at 85 Per Cent

BUFFALO, Oct. 26.—The market has slowed down to some extent, though small orders are fairly numerous. One interest which reports the sale of 3000 to 4000 tons, states none of the transactions involved was large. The New York Air Brake Co.'s requirements for its Watertown, N. Y., plant, 1500 tons, are said to have been placed. The market appears firm at \$20, base furnace, for business in this district, and at \$19 for Eastern shipments.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25	\$19.00 to \$20.00
No. 1X foundry, sil. 1.25 to 1.75	19.50 to 20.50
No. 1X foundry, sil. 1.75 to 2.25	20.50 to 21.50
Malleable, sil. up to 2.25	20.00
Basic	19.00
Lake Superior charcoal	27.25

Finished Iron and Steel.—The bar market is firm at 2.265c. to 2.365c., Buffalo, with inquiries small. Shapes are unchanged at 2.265c. Automotive demand for bars has slowed down somewhat. Business in sheets is fair, with local mill operations at 85 to 90 per cent. The outlook for increased tonnage within a week or two is promising, according to sheet interests. Reinforcing bar sellers are interested in 300 tons to be let for the superstructure of the International Milling Co. building, Buffalo. Caissons taking 40 tons have already been let. Good demand for structural shapes characterizes the warehouse market. Wire mills are preparing for heavy wire cloth and poultry netting orders within the next two weeks.

Old Material.—The only large transaction of the week was the reported purchase by a local mill of between 15,000 and 20,000 tons of heavy melting steel, hydraulic compressed sheets and No. 1 busheling. The heavy melting steel is said to have brought \$16.50, as it was not of the grade known as selected No. 1, while the hydraulic compressed sheets and the busheling brought \$15. Stove plate is quiet so far as new purchases are concerned, though one interest is asking for shipment on orders placed some time ago at \$15.75. There is a little No. 1 cast moving in small lots at

\$16.50. A reduction in the demand for blast furnace material has occurred.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	\$15.50 to \$16.00
Selected No. 1 heavy melting steel	17.25 to 17.75
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought	12.00 to 12.50
Car wheels	17.00 to 17.50
Machine shop turnings	10.50 to 11.00
Mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.00 to 15.50
Stove plate	15.00 to 15.50
Grate bars	12.00 to 12.50
Hand bundled sheets	10.50 to 11.00
Hydraulic compressed	15.00 to 15.50
No. 1 machinery cast	14.00 to 14.50
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	13.75 to 14.25

REINFORCING STEEL

Awards for the Week Amount to About 4800 Tons, with Inquiries 3300 Tons

Awards for concrete reinforcing steel were light the past week, totaling about 4800 tons. A pier at San Francisco calling for 1500 tons was the largest order. New inquiries amount to 3300 tons.

BROOKLINE, MASS., 125 tons, hospital, to Joseph T. Ryerson & Son, Inc., Boston.

NEW YORK, 400 tons, section of the subway, from Rodgers & Hagerty, Inc., general contractor, to Day & Goater.

NEWARK, 1000 tons, Lincoln Highway viaduct; general contract not let.

HACKENSACK, N. J., 100 tons, Title Guarantee & Trust Co. Building, to Concrete Steel Co.

CANONSBURG, PA., 100 tons, factory extension, Continental Car Co., to Carlem Engineering Co.

CINCINNATI, 1200 tons, fourth section of Central Parkway for Cincinnati Rapid Transit Commission, to Joseph T. Ryerson & Son, Inc.

CINCINNATI, 500 tons, buildings for E. Kahn & Sons, part to Pollak Steel Co. and part to unknown fabricator.

SACRAMENTO, CAL., 125 tons, theatre, to Badt-Falk & Co., San Francisco.

SAN FRANCISCO, 1502 tons, Pier 45 on the San Francisco water front for the State Board of Harbor Commissioners, to W. S. Wetenhall Co., San Francisco.

SAN FRANCISCO, 400 tons, decking for the Carquinez Straits bridge at Crockett, Cal., to an unnamed interest.

SAN FRANCISCO, 400 tons, unnamed jobs, to Gunn, Carle & Co., San Francisco.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

SOMERVILLE, MASS., 1200 tons, First National Stores warehouse.

NILES CENTER, ILL., 150 tons, building for Division U of the Sanitary District.

SPRINGFIELD, ILL., 300 tons, grandstand for State fair grounds, Department of Public Buildings and Purchases.

MILWAUKEE, 175 tons, Tripoli Temple Shrine Mosque, to American System of Reinforcing.

ADEL, WIS., 125 tons, addition for Weiland Dairy Co., to Concrete Steel Co.

REDDING, CAL., 125 tons, Shasta Union High School.

SAN FRANCISCO, 250 tons, warehouse for the Crane Co.; bids in.

Detroit Scrap Market Firm

DETROIT, Oct. 26.—Prices remain firm on all grades of waste material and the general feeling of buyers seems to be that the market is practically on the bottom. Orders on dealers' books are ample to cover releases from producers and any further reduction in the automobile industry will probably tend to call on dealers' yard stocks.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate. No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$12.50 to \$13.00
Borings and short turnings	9.00 to 9.50
Long turnings	8.75 to 9.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	12.00 to 12.50
Stove plate	13.50 to 14.50
No. 1 busheling	11.00 to 11.50
Sheet clippings	8.00 to 8.50
Flashings	10.75 to 11.25

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	2.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets	4.30c.
No. 10 blue annealed sheets	3.80c.
No. 24 galvanized sheets	5.15c.
Common wire nails, base per keg	\$3.90
Black wire, base per 100 lb.	3.90

NON-FERROUS METAL MARKETS

The Week's Prices		Oct. 26	Oct. 25	Oct. 23	Oct. 22	Oct. 21	Oct. 20
		Cents per Pound for Early Delivery					
	Lake copper, New York.....	14.25	14.25	14.25	14.25	14.25	14.25
	Electrolytic copper, N. Y.*..	13.80	13.80	13.82½	13.82½	13.85	13.87½
	Straits tin, spot, New York..	69.12½	69.62½	69.50	69.50	69.20	69.27½
	Lead, New York.....	8.25	8.25	8.25	8.25	8.25	8.25
	Lead, St. Louis.....	7.90	7.95	8.00	8.00	8.25	8.35
	Zinc, New York.....	7.57½	7.62½	7.65	7.65	7.65	8.00
	Zinc, St. Louis.....	7.22½	7.27½	7.30	7.30	7.45	7.67½

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Oct. 26.—The copper market continues inactive and prices are lower. Sales of tin have been fairly large with prices receding. Lead has again been reduced in a fairly quiet market. Buying of zinc is moderate, with prices quite firm but lower.

Copper.—Consumers of electrolytic copper have shown very little interest the past week and buying has been of small proportions. As a result prices have gradually fallen from 14.12½c., delivered, a week ago, to 14.05c. today, with the possibility that 14c. could be done. There seems to be no particular cause for the weakness except a sentimental one resulting from the decline in the stock market. There has, however, been a little eagerness to sell on the part of one or two producers. The weakness in the domestic market has not affected the official price of the export organization, which is still 14.40c. c.i.f. It is understood that representatives of the new association are meeting daily in New York. Lake copper is quoted at 14.25c., delivered.

Tin.—The market has been very active at times in the past week with sales estimated at about 1500 tons. Consumers were fairly active buyers of nearby positions, with dealers purchasing futures to replace the nearby metal which they sold to consumers. Despite the fairly active market here, the London market did not behave particularly well, declines there being heavy. A feature of that market is the decided shrinking of the premium on spot standard tin which today is only

£4 10s. for future standard, whereas on Oct. 15 the same premium was £12 15s. It is suggested that the cause for this may be the increase in supplies, the covering of shorts or liquidation by the bulls, or a combination of all three. Yesterday the market was somewhat active with 200 tons of nearby metal, mostly Straits and English, changing hands. Today the market was again active with spot Straits tin quoted at 69.12½c. New York, fair sales being made at 69c. and 69.25c. on the decline. Quotations in London today were considerably lower than a week ago with spot standard quoted at £306, future standard at £301 10s. and spot Straits at £313 10s. Arrivals thus far this month have been 5280 tons with 4570 tons reported afloat.

Lead.—The American Smelting & Refining Co. made another reduction in its contract price yesterday, Monday, of \$2 per ton. The quotation now stands at 8.25c., New York. The outside market was already as low as 8c., St. Louis, and today metal from that district can be bought at 7.90c. Fair sales are reported, particularly for November delivery.

Zinc.—The quiet buying of prime Western zinc by galvanizers, referred to a week ago, has continued moderately. Prices, however, have been gradually declining until the metal today is quoted at 7.25c. for prompt shipment and 7.22½c., St. Louis, for November-December. There are reliable opinions in the market to the effect that there will be considerable resistance to further declines below the 7.25c., St. Louis price. Statistically the industry is quite strong.

Antimony.—The market continues to decline moderately with Chinese metal quoted today, Tuesday, at 14c., New York, duty paid, for spot delivery, and 13.75c. for futures which are December-January arrivals.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c. with shot nickel at 36c. per lb. Electrolytic nickel is quoted at 39c.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	71.50c. to 72.00c.
Tin, bar.....	73.00c. to 73.50c.
Copper, Lake.....	15.25c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.50c.
Zinc, slab.....	8.50c. to 9.00c.
Lead, American pig.....	8.75c. to 9.25c.
Lead, bar.....	11.25c. to 12.25c.
Antimony, Asiatic.....	15.50c. to 16.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	30.00c. to 30.50c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ⅓.....	43.00c. to 44.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	76.50c.
Tin, bar.....	78.50c.
Copper, Lake.....	15.00c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.00c.
Zinc, slab.....	8.50c.
Lead, American pig.....	9.00c.
Antimony, Asiatic.....	19.50c.
Lead, bar.....	11.50c.
Babbitt metal, medium grade.....	22.50c.
Babbitt metal, high grade.....	31.50c.
Solder, ½ and ⅓.....	44.25c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass.....	19.13½c. to 20.12½c.
Copper, hot rolled.....	22.75c. to 23.75c.
Copper, cold rolled, 14 oz. and heavier.....	25.00c. to 26.00c.
Seamless Tubes—	
Brass.....	24.00c. to 25.00c.
Copper.....	24.75c. to 25.75c.
Brazed Brass Tubes.....	27.12½c. to 28.12½c.
Brass Rods.....	16.87½c. to 17.87½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	12.00c. to 12.25c.
Zinc sheets, open.....	13.50c. to 12.75c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products and lead full sheets have not changed since Oct. 8. Zinc sheets continue to hold to the advance of July 20.

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass.....	19.12½c.
Copper, hot rolled.....	22.75c.
Zinc.....	11.75c.
Lead (full sheets).....	12.25c. to 12.50c.

Seamless Tubes—	
High brass.....	24.00c.
Copper.....	24.75c.

Rods—	
High brass.....	16.87½c.
Naval brass.....	19.62½c.

Wire—	
Copper.....	16.12½c.
High brass.....	19.62½c.
Copper in Rolls.....	31.62½c.
Brazed Brass Tubing.....	27.12½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 6 to 16 gage, 3 to 39 in. wide.....	27.50c.
Tubes, base.....	43.00c.
Machine rods.....	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse (Prices Cover Trucking to Customers' Doors in City Limits)

Base per Lb.	
19% c. to 20% c.	High brass
23c.	Copper, hot rolled
25.25c.	Copper, cold rolled, 14 oz. and heavier
12.25c.	Zinc
11.25c.	Lead, wide
	Seamless Tubes—
24.25c.	Brass
25c.	Copper
27% c.	Brazed Brass Tubes
17% c.	Brass Rods

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. per lb. delivered.

Non-Ferrous Metals at Chicago

OCT. 26.—Inquiry and sales of copper are light but the price of last week is holding. Lead is easier and zinc is off in a quiet market. The old metal market is unusually quiet and prices quoted are nominal.

We quote, in carload lots, Lake copper, 14.37½c.; tin, 71c.; lead, 8.10c.; zinc, 7.40c.; in less than carload lots, antimony, 15.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	12.00c.	13.50c.
Copper, heavy and wire	11.50c.	12.25c.
Copper, light and bottoms	9.50c.	10.75c.
Brass, heavy	7.25c.	8.75c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	9.00c.	10.25c.
No. 1 yellow brass turnings	8.50c.	9.25c.
No. 1 red brass or composition turnings	8.25c.	9.25c.
Lead, heavy	6.75c.	7.25c.
Lead, tea	5.00c.	5.75c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

bottoms, 9.75c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 6.75c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c.; all being dealers' prices for less than carload lots.

RAILROAD EQUIPMENT

Purchases of Cars Continue Small and New Inquiry Is Unimportant

Car purchases of the past week totaled slightly more than 1600, of which more than 1500 were awarded by the Louisville & Nashville, which also closed on 18 locomotives. The Phillips Petroleum Co. has 200 tank cars under inquiry and the New York Central is asking for 60 air-dump cars.

The Louisville & Nashville has placed 1000 gondola cars and 20 30-yard air-dump cars with the Pressed Steel Car Co., 250 flat and 250 automobile cars with the Tennessee Coal, Iron & Railroad Co., 28 miscellaneous passenger and combination coaches with the American Car & Foundry Co., and 18 locomotives with the American Locomotive Co.

The Youngstown Sheet & Tube Co. has placed 100 mine cars with the Enterprise Wheel & Mine Car Corporation.

The New York Rapid Transit Corporation has ordered 2 box and 10 flat cars from the Pressed Steel Car Co.

The Manila Railroad has bought 50 flat cars from the Koppel Industrial Car & Equipment Co.

The New York Central is inquiring for 60 air-dump cars.

The Southern Pacific will purchase 500 car sets, which includes steel underframes and superstructure for box cars.

The Chicago & North Western expects to buy 500 car sets, including steel underframes and superstructure for box cars.

The Phillips Petroleum Co. is inquiring for 200 tank cars.

The American Steel & Wire Co. has placed an order with the Clark Car Co. for rebuilding 40 of its 30-yard extension side dump cars.

M. K. Frank, 15 Park Row, New York, has been inquiring for a 10 to 15-ton, 36-in. gage locomotive for export, steam, oil or gasoline-operated.

STEEL CORPORATION EARNINGS

For Third Quarter \$5 per Share of Common Stock, the Highest in Over 8 Years

Earnings of the United States Steel Corporation for the third quarter of 1926 amounted to \$5 per share of common stock after allowing for the usual dividends on the preferred stock. For the first quarter the corresponding rate of earnings was \$3.89 per share of common stock, and for the second quarter, \$4.20. The quarter's showing is the highest since the second quarter of 1918. The regular dividends of 1% per cent were declared on both the preferred and common stocks.

The amount of earnings available for common stock dividends in the first, second and third quarters of 1925 was \$2.93, \$3.07 and \$3.44 respectively, or \$9.44 for the first nine months of last year compared with \$13.09 for the same period this year, without allowance, of course, for appropriations and expenditures for additions and improvements to plants. Such allowances last year amounted to \$25,000,000, or nearly \$5 per share of common stock. The surplus for the three quarters this year now amounts to \$39,832,768, against \$29,632,442 for all of 1925.

EARNINGS IN RECENT YEARS				
Quarters	1926	1925	1924	1923
First	\$45,061,285	\$39,882,992	\$50,075,445	\$34,780,069
Second	47,814,105	40,624,220	41,381,039	47,858,181
Third	52,626,826	42,400,419	30,718,415	47,053,680
Fourth		42,630,840	30,939,912	49,954,744

EARNINGS FOR THIRD QUARTER				
	Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings	
July, 1926	\$18,488,272	\$689,477	\$17,798,795	
Aug., 1926	17,933,074	688,977	17,244,097	
Sept., 1926	18,272,510	688,576	17,583,934	
	\$54,693,856	\$2,067,030		
Total earnings after deducting all expenses incident to operations, also estimated taxes and interest on bonds of the subsidiary companies			\$52,626,826	
Less, charges and allowances for depletion and depreciation, applied as follows, viz.:				
To depletion and depreciation and sinking funds on bonds of subsidiary companies			\$13,548,171	
To sinking funds on U. S. Steel Corporation bonds			2,801,090	
			16,349,261	
Net income			\$36,277,565	
Deduct: Interest for the quarter on U. S. Steel Corporation bonds outstanding			\$4,273,910	
Premium on bonds redeemed			293,750	
			4,567,660	
Balance			\$31,709,905	
Dividends:				
Preferred, 1% per cent.			\$6,304,919	
Common, 1% per cent.			8,895,293	
			15,200,212	
Surplus for the quarter			\$16,509,693	

Youngstown Sheet & Tube Earns \$3.80 on Common Stock

Net profits of \$4,007,460 were realized by the Youngstown Sheet & Tube Co., Youngstown, Ohio, for the third quarter of 1926. This is equivalent to \$3.80 per share of common stock, after allowing \$249,219 for dividends on preferred stock.

The profits for the preceding period amounted to \$4,181,796, and for the first quarter \$3,804,837. The surplus for the third quarter was \$2,770,634.

Jones & Laughlin Third Quarter Earnings Total \$5,856,883

The net earnings of the Jones & Laughlin Steel Corporation, Pittsburgh, for the third quarter of this year totaled \$5,856,883. After deductions for depreciation, depletion, bond interest and dividends, there was a surplus of \$2,542,190.

PERSONAL

D. R. Mathias, whose resignation as general superintendent of the Joliet works of the Illinois Steel Co. was announced in **THE IRON AGE** last week, has planned to devote considerable time to travel. Accompanied by Mrs. Mathias, he will leave soon after Nov. 1, when his resignation takes effect, for Hawaii, where a stop of several weeks will be made before going on to the Orient.



D. R. MATHIAS

Swen L. Bengtson, International Construction Co., Ltd., 56 Kingsway, London, England, is spending some weeks in the United States.

Evan J. Parker, formerly of the Morgan Engineering Co., Alliance, Ohio, has joined the Northern Engineering Works, Detroit, in charge of the sales promotion division.

William Althoff has resigned his post as assistant chief of the Industrial Machinery Division, United States Department of Commerce, to be special representative to Mexico and Cuba for the Studebaker Corporation, supervising the factory's dealer agents.

J. R. Brandt has joined the Cleveland office of the Bridgeport Brass Co. as raw material salesman in Pittsburgh territory and parts of Ohio.

Charles Eisler, president and treasurer Eisler Engineering Co., Newark, N. J., left for Europe, Oct. 16. His first stop will be in Russia, where he will visit Russian electrical lamp and radio manufacturing concerns. He will also visit Austria, Belgium, Bohemia, France, Germany, Holland, Hungary, Italy, Norway, Sweden, Poland, Rumania, Czechoslovakia, Spain and Switzerland.

C. W. Sproull, of Allen, Sproull & Allen, Fort Worth, Tex., recently visited the Bridgeport Brass Co., Connecticut, to complete arrangements for selling in the Southwest the Bridgeport line of plumbing goods, Plumrite brass pipe and fittings, and Bridgeport-Keating flush valves.

F. I. Plechner was appointed purchasing agent of the Great Northern Railway Co. by the board of directors. He succeeds F. A. Bushnell, resigned.

George B. Durell has been elected president of the American Fork & Hoe Co., Cleveland, succeeding W. H. Cowdery, who has become chairman of the board of directors. Mr. Durell has been vice-president and general manager, and will continue to serve in the latter capacity.

Colonel Maxwell W. Smith, sales manager Duriron Co., Dayton, Ohio, has been appointed commander of the 308th Engineers of the Reserve Corps of the United States Army.

J. E. M. Schultz has been named manager of the office of the Sullivan Machinery Co. in Dallas, Tex. He succeeds D. H. Hunter, resigned. Mr. Schultz was formerly in the Knoxville, Tenn., office of the company.

William P. Woodside was recently made president of the American Twist Drill & Tool Co., Detroit.

J. E. Waterhouse, recently located at St. Catharines, Ontario, has been made general manager of the Montague Machine Co., Turners Falls, Mass., succeeding W. P. Argy, resigned. J. R. Farnsworth, Turners Falls, is general superintendent, while William Sims, formerly of New Britain, Conn., is foundry superintendent, succeeding Gerald Croke, who resigned to return to Athol, Mass. The Turner Falls company is a subsidiary of the International Paper Co.

John C. Spence, works manager, machine division, Norton Co., Worcester, Mass., was the speaker at the October meeting of the Engineering Society of western Massachusetts, at Worcester.

M. I. Dorfman has been appointed engineer of the dust-collecting department of the Pangborn Corporation, Hagerstown, Md., manufacturers of sand-blast equipment. He was formerly connected with Allis-Chalmers Mfg. Co.

Dr. Colin G. Fink, Columbia University, and secretary of the American Electrochemical Society, addressed the Detroit section of the Society of Automotive Engineers, Thursday evening, Oct. 21, on "Chromium—a Metal of Many Uses."

George F. Murphy has resigned his position as sales engineer of the Heine Boiler Co. to take up his duties as president and general manager of the Mogus Machine Co., Philadelphia.

J. W. D. Cook is now connected with the Fairbanks Morse Co., Three Banks, Mich. He formerly had been associated with Newcombe-Hawley, Inc., St. Charles, Ill., as resident manager.

George E. Barrett, formerly chief engineer for the Bay City Foundry & Machine Co., Bay City, Mich., is now vice-president of the Lenher Engineering Co., New York.

E. F. Brown has been appointed works manager of the Pilliod Co., Swanton, Ohio, manufacturer of locomotive valve gears.

H. S. Bradley, president Penn Mold & Mfg. Co., Dover, Ohio, has just returned from a short European trip.

D. M. Weir of the Weirton Steel Co., Weirton, W. Va., was reelected president of the West Virginia Manufacturers' Association. M. T. Davis of the Kanawha Mfg. Co., is one of the new vice-presidents.

R. H. Cross has been appointed assistant to G. C. McMullen, district manager of sales, industrial division of the Timken Roller Bearing Service & Sales Co. His offices will be in Seattle. He was formerly Seattle branch manager for the company. Yale D. Hillis succeeds Mr. Cross as Seattle branch manager. He was formerly manager of the Portland office, and when this office was discontinued he was engaged at the main office, Canton, Ohio. E. N. Beisheim, formerly with the Bock Bearing Co., Toledo, Ohio, has been appointed assistant to the general manager of the company. S. C. Partridge has been placed in charge of the Buffalo office, industrial division. He succeeds Lee Warrender, who resigned to enter another field. Mr. Partridge trained in the engineering department of the Timken company.

R. H. Foster has resigned as assistant superintendent of the open-hearth department, Weirton Steel Co., Weirton, W. Va., to become assistant manager of the Continental Steel Products Co., Youngstown, Ohio. He was associated for four years with the Weirton company.

Heinrich Främb, technical director of the Rasselsteiner Eisenwerks Gesellschaft, Neuwied-Rasselstein, Germany, maker of tin plate and quality sheets, is now on a visit to tin plate plants in the United States.

O. N. Yule, Frost Mfg. Co., Kenosha, Wis., maker of brass goods, has been elected president of the Milwaukee branch of the National Association of Purchasing Agents.

C. B. Fitzgerald has been appointed secretary and general manager of the Federated Industries of Washington, with offices in Seattle.

Dr. Birger Egeberg, formerly metallurgist with the Holcomb Steel Co., Syracuse, N. Y., has joined the laboratory forces of the International Silver Co., Meriden, Conn.

OBITUARY

LON P. SUTTER, assistant general manager of sales Union Drawn Steel Co., Beaver Falls, Pa., died at the Pittsburgh Hospital, Pittsburgh, Oct. 21. He was born in Punxsutawney, Pa., Sept. 12, 1882, and entered the steel industry in 1911,



L. P. SUTTER

when he became associated in a sales capacity with the Mark Mfg. Co., Chicago, in the Toledo, Ohio, headquarters. In 1919 he was appointed to the position of Pittsburgh district sales manager of the Steel & Tube Co. of America, formed in 1918 by a consolidation of the Mark Mfg. Co. and the Iroquois Iron Co. This position he retained until the absorption of the Steel & Tube Co. by the Youngstown Sheet & Tube Co. late in 1923. Early in 1924 he joined the Union Drawn Steel Co.

Cambridge City, Ind., manufacturers of shears, punches, rolls and presses, died at his home on Oct. 17, following a protracted illness. He was 45 years of age and had been active in the company with his father and four brothers during his entire life.

FRED HERGET, assistant purchasing agent Dayton Malleable Iron Co., Dayton, Ohio, died at his home on Oct. 13.

THOMAS E. CUNNINGHAM, foundry superintendent Crompton & Knowles Loom Works, Worcester, Mass., died at his home in that city Tuesday, Oct. 19. He was employed by the Worcester firm 24 years, going from the company's Providence, R. I., branch to Worcester in 1917. Funeral services were held Friday, Oct. 22.

EDWARD KITTEREDGE HILL, who died recently in Berkeley, Cal., at the age of 74 years, was a graduate of the Worcester Polytechnic Institute, Worcester, Mass., in 1871, its first class. He helped to organize the American Wheelock Engine Co., Worcester, of which he was general manager. Afterward the company was consolidated with the George H. Corliss Engine Co. and the Rhode Island Locomotive Works, Providence, R. I., and Mr. Hill was consulting advisory engineer.

JAMES B. STANWOOD, vice-president Stanwood Corporation, Cincinnati, died at his home Oct. 21, following a brief illness. He was 70 years old. He was associated with the Stanwood Corporation and its predecessor, the Houston, Stanwood & Gamble Co., for the past 35 years.

HAS OLD WORLD TRAINING

Prepared for His Work by Family Traditions, Schooling and Experience

In a young country, the industrial executive is the exception who is fitted for his work by heredity, education, training and experience. Born of a family which had long since

forged a name for itself in the tool steel industry, schooled to uphold the business traditions of his line, trained in the technique of his chosen vocation, identified with the development of a new product, stainless steel, and fortified by service both in subordinate and more responsible positions, L. Gerald Firth is well prepared for the duties of general manager of the Firth-Sterling Steel Co., McKeesport, Pa., a position to which he was recently elected. His great grandfather, Thomas Firth, was one of the original members of the firm of Thomas Firth & Sons, Sheffield, England, which commenced business in 1842; his grandfather, John Firth, opened up business with the United States in 1855; his father, Lewis J. Firth, has been connected with the Sheffield company and its American business for over 50 years. The organization of the Firth-Sterling Steel Co., an associate company, with an American manufacturing plant at McKeesport, Pa., took place in 1896.



L. GERALD FIRTH

L. Gerald Firth was born in Sheffield, England, Dec. 16, 1886, and was educated at Uppingham School and at Trinity College, Cambridge. In February, 1910, he came to the Firth-Sterling Steel Co., McKeesport, Pa., to survey the requirements of the business in the United States before taking up the study of tool and die steel at the Sheffield, England, works of Thomas Firth & Sons, Ltd. After several years of training at Sheffield he returned to McKeesport in March, 1914, and while there made both stainless steel and stainless iron, completing the corrosion tests for these metals when the world war broke out and put an end to his work. On Aug. 4, 1914, the day on which war was declared, he left for England where he obtained a commission as lieutenant in the field artillery. He served throughout the war, both in action at the front and behind the lines, assisting in the manufacture and procurement of munitions and supplies. In the United States he assisted in the manufacture of large orders which had been entrusted to the Washington Steel & Ordnance Co., Washington, D. C., by the British Government. He returned to the front in 1916, and on April 24, in the following year, while serving as captain on artillery observation, was struck in the knee by fragments of a shell. Amputation was necessary and he was invalided to England.

On May 28, 1918, he returned to the Firth-Sterling Steel Co., McKeesport, Pa., as works manager. Here his experience abroad with Thomas Firth & Sons, Ltd., in connection with the manufacture of high speed steel, die steel and stainless steel proved invaluable. In 1913 at the Norfolk Works of the English company, he was present at the weighing and melting of a pot containing a new mix of iron and chromium. This was done under the instructions of Harry Brearley, inventor of stainless steel, and was the beginning of the manufacture of this product on a commercial basis.

The name of the manufacturer of alloy-coated sheets known as "Vapo Metal" is wanted by the Met-L-Wood Corporation, 2419 West Fourteenth Street, Chicago.

Position of New England's Industry

How Foundry and Machine Shop Production Compares with Other Regions— Some of the Limiting Factors

THE conclusions of the survey of New England's industrial status, instituted under the auspices of the Boston Chamber of Commerce, were outlined briefly in THE IRON AGE of Oct. 7, page 1009. Pointing out that New England has not made satisfactory progress since 1921, the report is emphatic that there have been no economic changes to justify the fact and holds that the responsibility lies solely with the industries of that section of the country. The question is taken up at length from the bearing on business of several factors, such as transportation, labor, overhead costs, sales expense and management.

Transportation Cost Relatively Small Factor

TOUCHING on transportation, the report says: "The small proportion which transportation costs bear to sales value in highly fabricated mechanical equipment may be illustrated by comparing the relative effect of such expense on the final sales value of machine tools manufactured in New England versus those manufactured in Cincinnati, when both products are sold in Detroit. As a typical example, take an 18-in. geared head engine lathe weighing $1\frac{1}{2}$ tons and costing \$1,700 or a little over \$1,000 per ton. The freight rate paid by the New England manufacturer on pig iron will amount to \$4.91 per ton, while that paid by the Cincinnati manufacturer will come to \$3.15. The New England manufacturer will pay \$8.83 per ton to transport the finished product, in carload lots, to Detroit, while the Cincinnati manufacturer will pay only \$5.50. The total difference in transportation cost comes to \$5.06 per ton, less than $\frac{1}{2}$ per cent of the sales value of the machine."

Further, the report says the average freight rate on pig iron from nearest sources of supply to principal industrial centers in the Mid-West is about \$2.60 a ton, about \$3.30 in the Mid-Atlantic section, and \$4.90 in New England. This disadvantage to New England of from 7 to 12 per cent shrinks to about 2 or 3 per cent of the sales price, assuming rough castings to sell at from 4 to 5 times the cost of the pig iron. The difference in cost of shipping a ton of rough castings to St. Louis from Boston and Cleveland amounts to \$5, or about 5 per cent of the sales cost, thus making New England's freight increment approximately 7 per cent as an extreme in this rough type of product.

This explains why such goods as cast iron and malleable fittings can be best produced near the place of consumption. On the other hand, such items as small iron body valves and brass valves and fittings made in New England, with fair freight rates, can compete with the Mid-West.

In steel castings, again, the situation is different. While in cast iron, cost of the pig predominates, steel castings require only 10 to 12 per cent of pig iron; the rest of the raw material is chiefly scrap of local source. The labor situation is relatively satisfactory. In steel castings, therefore, New England plants should compete effectively with any other cast-steel manufacturing center for equal distance of transportation of finished product.

Amounts of Various Overhead Expense Items

AS an indication, however, of the place that various items of overhead and sales expense occupy in a plant's expenditure, the following data are drawn from the study of representative New England plants.

Taxes, excluding income taxes, average about 2.6 per cent of the manufacturing cost. In several plants these run below 1 per cent, while in two or three cases the tax expense is above 5 per cent.

Insurance averages about 0.6 per cent, in some cases, however, running as high as 2 per cent.

Power and light average about 3 per cent, ranging

in different plants from less than 1 per cent up to over 7 per cent.

For depreciation, the amounts allowed bear little relation to the type of plant, the variation being more between individual plants, and evidently due in part to methods of bookkeeping. The range, for example, in different plants runs from 2 up to 8 per cent.

The cost of administration, not including selling, averaged about 6 per cent.

Inadequate Attention to Marketing

UNDER the classification of marketing, the report argues that it should be of distinct advantage for the machine tool builder to foster through his advertising and his sales force this idea that productive machinery is an investment and should therefore be bought on a basis of yield rather than primary cost. An astonishingly small amount of the advertising space now in use is directed to this purpose.

"It is noticeable that the tendency in the automotive field is to place the selection and purchase of productive equipment in the hands of chief officials. This type of man is both more accessible through advertising and more susceptible to the investment viewpoint than the average purchasing agent."

Of 27 leading firms, only 11 show an export business and this ranges from 1 to 11 per cent, one firm, manufacturing patented machinery, going as high as 50 per cent. Among these plants, too, there has been established no uniform policy as to credits.

"We find that in the year 1923 for the United States as a whole, 6.9 per cent of the metal working machinery produced was exported. Returns from six of our largest machine tool builders in New England show that one manufacturer exceeded this percentage by exporting 11 per cent of his product. One had exports totaling 6 per cent while the other four exported less than 1 per cent.

There is a great need in particular for organization for the purpose of engaging expert research into costs viewed from an engineering rather than a strictly accounting standpoint, so that uniform prices may be established which will enable all in the field to manufacture at a fair profit. "If the New England manufacturer in the metal trades will follow the lead of the automobile manufacturer and cooperate with his fellow manufacturers for the improvement of the trade as a whole, he should find many hitherto unsuspected sources of profit."

Expansion by Broad Regions in Foundry and Machine Shop Production

THE production of foundry and machine shop products (including textile machinery and machine tools) in the United States has more than tripled in the 26 years from 1899 to 1923. The increase in value has been from \$670,000,000 to \$2,750,000,000, while the price of metal products has increased about 31 per cent over the period. The percentage gains or losses over each census period were as given in the accompanying table. Up to 1914 the Mid-West gained more than New England and far surpassed the Mid-Atlantic section.

Percentage Gains or Losses in Production of Foundry and Machine Shop Products

	New England	Mid- Atlantic	Mid-West
Gain 1899-1914.....	24	11	70
Gain 1914-1919.....	232	181	215
Loss 1919-1921.....	-25	-29	-39
Gain 1921-1923.....	25	38	66
Gain or Loss 1919-1923...	-4	-2	+1
Total Gain 1899-1923.....	292	206	442

From the end of the war to 1925, the total annual production of machine tools in the United States fell

from \$212,400,000 to \$136,206,000, dropping as low as \$67,729,000 in 1921.

The Mid-Atlantic States operated at an advantage over the rest of the country during this period, taking a comparatively small loss in 1921 and dropping in total only 20 per cent of their 1919 production. New England, on the other hand, was the hardest hit by

the depression, dropping from a production of over twice that of the Mid-Atlantic States in 1919 and regaining only business enough to bring her 1923 value of product up to 46 per cent less than that for 1919. The Mid-West ran nearly parallel with the country as a whole, sustaining a 38 per cent loss in production over the period.

REFRACTORIES INSTITUTE

Cooperation of Consuming Industries Urged at Fall Meeting—Favor Standard Dimensions for Brick

That efforts put forth by manufacturers of refractories must be paralleled by a like interest on the part of those who consume them in order to assure mutual success was the keynote of the fall meeting of the American Refractories Institute held at the University Club, Pittsburgh, Oct. 21. This message, as sounded by J. M. McKinley, Crescent Refractories Co., Curwensville, Pa., president of the institute, was particularly apt, as a greater representation of the iron and steel and other refractories consuming industries was one of the only things which detracted from the general success of the convention.

Limiting Size Variation in Brick

Of particular interest was a paper by Stuart M. Phelps and H. Foster Robertson, industrial fellows, Refractories Fellowship, Mellon Institute of Industrial Research, Pittsburgh, on "The Variation of Size Occurring in Clay and Silica Refractories." Preprints of this paper had been distributed before the meeting and provoked a lively discussion, although through vote, it finally was referred back to the authors with a recommendation that the study and investigation be extended to all districts, the paper having been based only upon investigations of Pennsylvania brick, and that a report be submitted at the next meeting of the institute.

The paper marked a definite step in the direction of establishing a standard of dimensions for brick, although it pointed out the difficulties to be encountered in providing users with $9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ -in bricks. It was stated that all manufacturers could not produce to those dimensions easily or economically at present and that the immediate consideration was one of control of the variation in dimensions of existing sizes. A limitation of tolerances was advanced as the method to bring about satisfaction among users now laboring with difficulty because of the dimension variations between the product of various manufacturers. A machine for measuring the brick was shown and described, together with some interesting charts showing how many brick would be acceptable if the tolerance recommendation was accepted. This recommendation suggested that not more than 10 per cent of the brick in a shipment shall vary from the average size more than $1/16$ in. in thickness or width or more than $1/8$ in. in length.

Interpreting Laboratory Data

R. F. Geller, Bureau of Standards, Washington, in his paper "The Significance of Laboratory Data," stressed the danger of acceptance of empirical data as the basis of specifications and expressed the belief that it was not helpful to publish generalizations, which might retard scientific advancement by limiting the range of endeavor. The cone softening point he said was no more than the coefficient of thermal expansion. He stressed the use of tests and the trial of the results of tests, but said that those making them should not become satisfied that these methods are sufficient.

Gordon B. Wilkes, Massachusetts Institute of Technology, Cambridge, Mass., said in an informal talk prior to a discussion of a paper, "Boiler Furnace Refractories," by E. B. Powell, Stone & Webster, Inc., Boston, before the American Society of Mechanical Engineers in New York on Nov. 30, 1925, that the interpretation of tests and their correlation counted most. Referring to Mr. Powell's paper, he stated that its purpose was not to tell the manufacturer how to make brick, but to raise the question of whether he was

making, burning and sorting as well as possible. Mr. Wilkes said that there was no real reason why grog in the brick should vary in size, nor why the brand name should not mean the same size of brick at all times. He also sustained the conclusions of Mr. Geller as to the danger of accepting as final the results of tests that were not positively established.

L. E. Hankinson, West Penn Power Co., Pittsburgh, also hinged his talk on Mr. Powell's paper, in reviewing his experiences when trying to find a suitable slag resistant refractory for the furnace boilers at the plants of his company. Because of the installation expense of the furnace and the heavy burden of expense when it was down, it was essential, the speaker said, to secure the inner wall protection against slag erosion that would give the greatest service at the least cost. High temperature cements having failed, investigation of refractories was started and all kinds except carborundum brick were tried out. There were different results from the various refractories, and on account of a difference in the coal, different results were reached at the two big power plants of the company.

Samuel J. McDowell, Bureau of Standards, Columbus, Ohio, in a paper on "Laboratory Study of Slag Erosion," stressed the lack of fundamental data upon which to build positive conclusions. The concluding paper of the meeting on "Plastic Refractories," by Stuart M. Phelps, was an interesting review of tests of four kinds of clays.

Chain Belt Co. Starts New Engineering Building at West Milwaukee

Chain Belt Co., Milwaukee, has started work on a new engineering building at its West Milwaukee works. The building will house the steel fabricating and assembly departments, drafting room, and general engineering offices of the contract division of its business.

This is the third major unit to be erected on the 59-acre West Milwaukee site, and is part of the general plan gradually to move the downtown Milwaukee plant located at Sixteenth Avenue and Park Street, to the larger tract in West Milwaukee. When the engineering building is completed approximately half of the organization will be located at the West Milwaukee works.

The new unit will be of steel, brick and glass construction with approximately 80 per cent of the roof and walls in glass. Approximately 240 tons of steel are included in the specification. It will be 308 ft. long and 120 ft. wide with the exception of the office building, which will be 144 ft. wide. Frank B. Chase, Inc., Chicago, is the engineer and designer.

The new building will have eight traveling cranes. Several new and larger machines are being added to the present equipment. It will be devoted exclusively to the manufacture of contract engineering work, such as conveyors, elevators, traveling water screens, bunkers, hoppers, and general steel structural work. Every department connected with that part of the company's business will be housed in the new building, making it a self-contained unit in every sense.

The Chain Belt Co. was organized in 1891 for the manufacture of chain and power transmission machinery, which naturally developed into the additional line of material handling conveyors. In 1908 the concrete mixer line was added and since developed to such an extent that the second large unit at West Milwaukee was built to house that branch of the business. The Chain Belt Co. has affiliated with it the following Milwaukee concerns: the Sivyier Steel Casting Co., the Federal Malleable Co., and Interstate Drop Forge Co.

MAKING FARMS PROSPER

Implement Makers Advocate Industrial Cooperation in Agriculture

That the business of agriculture can be made to prosper by means of intelligent progressive management and the use of labor saving and improved modern

equipment, such as is employed in any successful enterprise, was urged at the annual convention of the National Association of Farm Implement Manufacturers held at the Palmer House, Chicago, Oct. 20-22. E. J. Gittens, vice-president J. I. Case Threshing Machine Co., Racine, Wis., the retiring president of the association, pointed out that, just as the various departments of a manufacturing concern must cooperate to the fullest extent for greatest efficiency and best returns, so must the manufacturer and dealer cooperate in the distribution of equipment if the three factors in agriculture, the farmer, the dealer and the manufac-



R. W. E. HAYES

turer, are to prosper and make progress.

It was suggested that both manufacturers and dealers can cooperate in salvaging or otherwise disposing of worn out and obsolete machinery which is allowed to lie about on farms. This condition is largely responsible for the impression that the farmer buys too much machinery, and it is similar to the situation which would result if manufacturers and dealers permitted their scrap and obsolete machinery to remain scattered about their premises.

Future Development of Farm Machinery

Further improvement in design and application of farm machinery and the continued standardizing of parts was recommended alike by manufacturers, agricultural engineers and practical farmers, the latter being well represented at the Thursday morning session. O. W. Sjogren, president of the American Society of Agricultural Engineers, stated that the development of farm machinery will continue as it has done during the past fifty years. Within the last five years harvesting methods in the more arid sections of the country have been revolutionized and there are now strong indications that these same methods are getting well under way in the more humid territories. With reference to the use of power on the farm, he said it was indicated that it is used to replace human labor in but little over half the work now necessary. He expects the wide interest in adopting electric power more generally in agriculture to have a profound influence on farming methods and the equipment of the future. "The matter of standardization and simplification in the farm implement industry has made some progress in the past few years," continued Mr. Sjogren, "but much remains to be done. The American Society of Agricultural Engineers already has a standards program outlined by members representing the farm equipment industry, but it is imperative that every branch of the industry be represented in working out satisfactory standards."

New Officers Elected

The attendance at the convention was large, there being a registration of 276, representing 127 member companies. At the regular business meeting R. W. E. Hayes, Hayes Pump & Planter Co., Galva, Ill., formerly chairman of the executive committee, was elected president of the association, succeeding E. J. Gittens, and H. E. Jackson, Emerson-Brantingham Co., Rockford,

Ill., was named to succeed Mr. Hayes on the committee.

It was also announced that the water system department, a newly organized branch of the association, is actively at work, both in the interest of the manufacturer and the farmer, 11 companies manufacturing such equipment having taken out membership in the department since its establishment.

To Hold Further Hearings in Jones & Laughlin Case

WASHINGTON, Oct. 26.—The Interstate Commerce Commission has announced that a hearing in the Jones & Laughlin Steel Corporation case will be held Dec. 1 at Pittsburgh before Examiner Jewell. At the same time the commission also made public an order suspending from Oct. 20 to Feb. 17 proposed increases in rates on iron and steel in the Chicago switching district, which were filed by the carriers as one outgrowth of the Jones & Laughlin scale. A hearing on the Chicago switching case will be held before Examiner Paul.

The Pittsburgh hearing in the Jones & Laughlin proceeding involves a complaint of steel producers in the Pittsburgh district against the scale established by the commission on iron and steel products from that district to the Middle West. The Pittsburgh steel manufacturers contend that the scale discriminates against them in favor of the Chicago district, one of the principal arguments being that the St. Louis market still is on an unduly preferential basis for the Chicago manufacturers. The latter recently countered by protesting against rates on steel from Chicago to points east and to the lower peninsula of Michigan, contending that existing rates are favorable to Pittsburgh.

The present and suspended Chicago switching rates, in cents per 100 lb., for carloads with a minimum weight of 60,000 lb., are illustrated in the following:

	One-Line Rate	Two-Line Rate	Three-Line Rate
Present	2.5	2.5	3
Proposed	3	5.5	6.5

*Subject to an alternative rate of 8c. per 100 lb. for a carload minimum weight of 36,000 lb.

Complaint Dismissed Against Wickwire Spencer Corporation

WASHINGTON, Oct. 26.—The Federal Trade Commission has announced dismissal of its complaint against the Wickwire Spencer Steel Corporation, New York, manufacturer of screen wire cloth. The complaint had charged the corporation with the acquisition of the entire capital stock of the American Wire Fabrics Corporation, Chicago, manufacturer of screen wire cloth and before the acquisition, the commission said, a competitor of the Wickwire Spencer Steel Corporation. The commission announced that in dismissing the case it had reserved the right to reinstate it after there has been an authoritative interpretation of Section 7 of the Clayton Act. This section relates to corporate stock acquisition.

National Safety Council Reports on Year's Work

The report of the work done by the National Safety Council to prevent accidents in the streets and in industrial plants was made Monday, Oct. 23, by W. H. Cameron, managing director, at the opening session of the Fifteenth Annual Safety Congress in Detroit.

The council has at present 4200 active members, and the gross income of the organization, amounting to more than \$500,000, was devoted largely to safety work in factories, shops and other industrial establishments. During the year 9,000,000 safety posters were distributed and 83 different pamphlets, detailing the fundamentals of safety engineering practices, were issued.

Safety messages have been delivered by holding meetings and giving educational talks. Investigation of new means of giving workers and the public greater protection against accidents was carried on.

British Industry Still Crippled

Prices Higher and Mills Show Less Interest in Forward Business—Continental Markets Strong—Japan Buys American Pipe

(By Cable)

LONDON, ENGLAND, Oct. 25.

THE pig iron situation is acute with only five furnaces in blast throughout the United Kingdom. Coal is scarce and domestic production is offered at prohibitive figures, while foreign coal is arriving irregularly. Steel works are suffering from the shortage of raw material and coal, and production is lower than in previous weeks. The Cleveland Bridge & Engineering Co., Ltd., has closed because of the shortage of raw materials. All steel makers are well booked and should be fully occupied when able to resume. Domestic and export inquiry is strong.

Continental iron and steel prices are firm with continued strong demand for semi-finished from British users, but supplies are difficult to obtain from the mills. Merchants with available stocks of semi-finished are

selling sizable quantities. The Société des Hauts Fourneaux et Acieries de Differdange, Luxemburg, is blowing in a furnace at Rumelange. The Friedrichshütte A. G., Westphalia, has booked 30,000 tons of rails.

Tin plate is strong and prices are advancing rapidly. There is large inquiry but makers are disinclined to quote for forward delivery owing to the uncertainty of obtaining coal. Mill operations are affected by irregular deliveries of coal and steel. First quarter tin plate is now quoted up to 23s. 6d. per base box, while end of the year shipment brings 23s. 9d. per base box. Prompt shipment tin plate is nominally 24s. base, all f.o.b. works port.

Galvanized sheets are active and makers sold out to the end of the year. Some are not quoting beyond the end of December. A few merchant parcels of Japanese specification black sheets have been sold but the market is generally quiet.

British Coal Strike Apparently Approaching the End

LONDON, ENGLAND, Oct. 15.—The coal strike seems to be finally drawing to a close after six months of almost complete idleness. So far there is no sign of any definite agreement being reached, but pitmen are beginning to break away in increasing numbers and more than 200,000 men are now back at work. For the first time since the calling of the strike Welsh coal is coming to the surface, enabling tin plate makers to resume even though they have to pay high prices for the fuel.

The disastrous effect of the strike upon the whole nation is clearly reflected in the monthly trade returns, the iron and steel industry, next to the coal trades, having been the most severe sufferer. In September the total exports of iron and steel were only about 160,000 tons, and for the nine months the shipments show a decline of more than 200,000 tons. Imports, on the other hand, have increased until in September they

totalled nearly 450,000 tons. These figures included about 60,000 tons of pig iron, 100,000 tons of billets and 90,000 tons of sheet bars, and the nine months compared with the same period of 1925 show an increase of about 300,000 tons in imports of iron and steel. In the meantime the situation in the pig iron industry has become acute. In the Cleveland district only two furnaces are in blast and no foundry iron is available for delivery before the middle of November. For this delivery the high price of £5 17s. 6d. per ton has been paid for Cleveland No. 3 G. M. B., representing a total increase of £2 7s. 6d. since the coal strike began.

Large quantities of semi-finished steel from the Continent, chiefly from Belgium, France and Luxemburg, have been coming in, and with the assistance of foreign coal sheet mills have been carrying on as best they can. Galvanized sheet makers, in particular, have heavy commitments and January is now about the earliest shipment available on any considerable quantities of No. 24 gage corrugated sheets in bundles.

Tin plate makers have been handicapped throughout

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham coke, f.o.b.	£3 0s.		\$14.58
Bilbao Rubio ore†	1 0		4.86
Cleveland No. 1 fdy.	6 5		30.38
Cleveland No. 3 fdy.	6 0		29.16
Cleveland No. 4 fdy.	5 19		28.92
Cleveland No. 4 forge	5 18½		28.80
Cleveland basic (nom.)	3 15	to £3 15½s.	18.23 to \$18.35
East Coast mixed...	4 7½		21.26
East Coast hematite	4 8		21.38
Rails, 60 lb. and up	7 15	to 8 0	37.66 to 38.88
Billets	6 10	to 8 0	31.59 to 38.88
Ferromanganese	15 0		72.90
*Ferromanganese	14 0		68.04
Sheet and tin plate bars, Welsh	6 15	to 7 10	32.81 to 36.45
Tin plates, base box.	1 3½	to 1 4	5.71 to 5.83
Black sheets, Japanese specifications	15 5	to 15 15	74.12 to 76.55
Ship plates	7 15	to 8 0	1.68 to 1.73
Boiler plates	9 15	to 11 0	2.11 to 2.39
Tees	8 5	to 8 10	1.79 to 1.84
Channels	7 10	to 7 15	1.62 to 1.68
Beams	7 5	to 7 10	1.57 to 1.63
Round bars, ¾ to 3 in.	8 0	to 8 10	1.73 to 1.84
Steel hoops	10 10	and 11 0*	2.28 and 2.39*
Black sheets, 24 gage	12 0	to 12 5	2.59 to 2.65
Galv. sheets, 24 gage	17 0	to 17 10	3.68 to 3.79
Cold rolled steel strip, 20 gage, nom.	18 0		3.91

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports (Per Metric Ton)

Foundry pig iron:(a)			
Belgium	£3 16s.	to £3 17½s.	\$18.47 to \$18.83
France	3 16	to 3 17½	18.47 to 18.83
Luxemburg	3 16	to 3 17½	18.47 to 18.83
Basic pig iron:			
Belgium	3 10	to 3 12	17.01 to 17.50
France	3 10	to 3 12	17.01 to 17.50
Luxemburg	3 10	to 3 12	17.01 to 17.50
Coke	0 18		4.37
Billets:			
Belgium	5 5	to 5 7	25.03 to 26.00
France	5 5	to 5 7	25.03 to 26.00
Merchant bars:			
Belgium	5 15	to 5 17½	1.26 to 1.27
Luxemburg	5 15	to 5 17½	1.26 to 1.27
France	5 15	to 5 17½	1.26 to 1.27
Joists (beams):			
Belgium	5 14	to 6 0	1.25 to 1.32
Luxemburg	5 14	to 6 0	1.25 to 1.32
France	5 14	to 6 0	1.25 to 1.32
Angles:			
Belgium	6 0		1.32
¾-in. plates:			
Belgium (nominal)	6 17½	to 7 0	1.51 to 1.54
Germany (nominal)	6 17½	to 7 0	1.51 to 1.54
¾-in. ship plates:			
Belgium	6 7½		1.40
Luxemburg	6 7½		1.40
Sheets, heavy:			
Belgium	6 3	to 6 4	1.33 to 1.34
Germany	6 3	to 6 4	1.33 to 1.34

(a) Nominal.

the strike. In many instances either foreign steel or coal or both have proved unsuitable, and operations at mills have been intermittent.

Order books of most mills are reported none too well filled, as for several weeks consumers both domestic and foreign have refrained from committing themselves, while makers were equally reluctant to quote.

BELGIAN PRICES STILL RISE

Some Mills Out of Market—Exporters Unable to Pay Current Prices and Meet German Competition

ANTWERP, BELGIUM, Oct. 2.—The steel market continues the advance that began early last month, and although several mills have temporarily withdrawn from the market, others still in need of more tonnage are seeking business. In the meantime there is evident a slight decrease in buying activity, which is resulting in a wide range of prices in some instances, the mills well booked quoting maximum prices and those still in need of tonnage accepting business at a lower level. On the whole, however, the market is firm. On a few products, German exporters are underquoting the current Belgian market, and as buyers are still seeking to purchase at lower than the current prices, these sellers are booking considerable business. In some quarters it is suggested that these German prices are not at present obtainable from the mills but are quoted by exporters, speculating on the prospect of an early settlement of the British coal strike, which would probably cause a slight decline in the market as British consumers have been heavy buyers as a result of the strike.

Despite the prospect of an easier market when the British coal strike is settled, makers are facing higher costs of production now and after the strike. Coal prices are a large item, reflected in a higher coke market, and with the British strike concluded, cheaper fuel will undoubtedly result, but in addition the wage level is up and there is the 25 per cent increase in railroad freight rates, effective Oct. 1. As mills generally buy raw materials f.o.b. cars at producers' works, paying the freight to their own mill and sell f.o.b. shipping port, the difference in freight rates, as far as export business is concerned, will be borne entirely by the mills.

Pig Iron.—Prices are firm and the outlook for the future is favorable. No tonnage remains for October delivery and the demand from foreign markets, especially Britain, for prompt shipment continues strong. British buyers, however, are inclined to hesitate at purchasing for November delivery in view of the possible settlement of the coal strike. Further increases in prices, however, are expected. Domestic business in phosphoric foundry iron has been done at 610 to 615 fr. per metric ton, f.o.b. furnace. For export £3 14s. to £3 15s. per metric ton, f.o.b. Antwerp is quoted. The price for syndicate coke has been increased to 230 fr. for October compared with 215 fr. in September. Coke bought in the open market for spot shipment brings 235 to 240 fr. per ton on occasion.

Semi-Finished Material.—Purchasing by British consumers continues on a large scale and tonnages available for prompt delivery are small. It is a sellers' market throughout, with buyers offering higher prices than the current market in order to secure early shipment. Blooms are quoted for export at £4 7s. 6d. (\$23.90) per ton, billets at £5 2s. 6d. (\$25.15) per ton and sheet bars at £5 7s. 6d. (\$26.35) per ton, all f.o.b. Antwerp.

Finished Material.—The small volume of current business and the fact that several mills are temporarily out of the market, makes it difficult to determine prices. Quotations differ with various mills, depending upon the tonnage on their books. As a whole, however, the market is strong and there is no evidence of an inclination toward concessions. Exporters are seeking to place immediate requirements, but complain

that the current quotations of Belgian mills are too high to permit of competition with German exporters. This possibly accounts for the small volume of business being placed at present. Mills are obtaining £5 10s. (\$27) per ton, f.o.b. Antwerp for bars and occasionally £5 12s. Exporters, however, are unwilling to offer more than £5 9s. per ton, Antwerp. Beams are quoted at £5 6s. (\$26) per ton, angles at £5 10s. (\$27) per ton, corrugated bars at £6 (\$29.40) per ton and steel hoops at £6 15s. (\$33) per ton, all f.o.b. Antwerp.

FRENCH PRICES STEADY

Buying Light as Consumers Reduce Stocks—Market Steady Since Cartel Formation

PARIS, FRANCE, Oct. 8.—Demand continues small and there is little expectation of an increase in buying until the large stocks in consumers' hands have been considerably reduced. With costs of production higher as a result of advances in the price of fuel and higher railroad rates, no decrease in the current quotations is expected and with buyers confining their activity to the reduction of the heavy stocks purchased when a run-away market was expected, no early increase in prices seems probable.

Export activity is also light and, with the International Steel Cartel beginning to affect market prices, there is a growing belief that Europe is entering into a period of comparative stability of prices. Prior to the conclusion of the cartel buyers, expecting higher prices, purchased rather heavily, and, despite claims of the cartel members that no effort at extreme advances will be made, quotations on beams and bars have been advanced still further.

Pig Iron.—Output of pig iron in August was 20,000 tons greater than in July. Possibly as a result of this, it is now certain that the tonnage to be placed at the disposal of consumers for October will not be completely absorbed. Quotations on phosphoric foundry and hematite iron are unchanged for domestic delivery and the export market is strong. Britain is not consuming large tonnages, but prices are as high as 75s. per ton, f.o.b. Antwerp for No. 3 foundry, with Belgian quotations at 625 fr., Antwerp. The old agreement by which France and Luxemburg will ship to Germany certain tonnages of steel and pig iron will probably be completely ratified by all parties in the immediate future. The steel section of the agreement has been signed and a meeting at Essen or Dusseldorf will probably settle minor points of difference on the pig iron deliveries. From the French and Luxemburg point of view, there is still to be settled the question of division of the total tonnage to be shipped to Germany.

Semi-Finished Material.—Prices are firm and the market continues active. Basic Bessemer billets are quoted up to 780 fr. per metric ton for domestic delivery. Export business has been closed at £5 to £5 2s. for billets, £5 15s. to £4 17s. for blooms and £5 8s. to £5 10s. for sheet bars.

Finished Material.—Any tendency to offer concessions to secure desirable business is rapidly disappearing since the formation of the International Steel Cartel. Demand continues quiet, but the price tendency is undoubtedly upward, evidently with the object of selling for export at more remunerative prices than have prevailed in recent months. Since the establishment of the cartel export prices on beams have advanced to £5 12s. 6d., for bars £5 15s. and for wire rods, £5 17s. 6d. per metric ton, all f.o.b. Antwerp. The domestic sheet market is not satisfactory, but export

prices continue firm on a slightly lower level than the quotations of Belgian and Luxemburg mills. Sheets of 5 mm. and heavier are generally quoted for export at £6 5s. per metric ton, Antwerp.

British Empire Steel Corporation in Difficulties

TORONTO, ONT., Oct. 26.—James A. Russell, tariff expert, and J. C. Saunders, Deputy Minister of Finance, of the Dominion Government, have gone to Sydney, N. S., to investigate the affairs of the British Empire Steel Corporation, which is in serious difficulty. A report by the Duncan Commission states that the first step toward bringing the maritime provinces back to normal economic conditions is the rehabilitation of industry. With the tariff denied as a means for this purpose, the commission in its report suggests a reversion to a policy of bounties on iron and steel products.

The British Empire Steel Corporation was formed about six years ago, and was a merger of the Dominion Iron & Steel Co., the Nova Scotia Steel & Coal Co. and also shipyard, wire and nail and other allied companies. At the time of the merger the Conservative party was in power at Ottawa and refused to incorporate the British Empire Steel Corporation with a capital of \$100,000,000. It was the product of the post-war combination and merger policy and the federal government considered it was over-capitalized. Failing to secure incorporation at Ottawa, the promoters were successful in their application to the Liberal Government of Nova Scotia.

The British Empire Steel Corporation was a failure in part through insufficient protection. A Toronto trust company is now in charge of the Dominion Iron & Steel Co. section of the corporation, and there has recently been some talk of the Nova Scotia Steel & Coal Co. also going into the hands of receivers, although the latter step is being fought by the holding company and no definite step has been taken in this connection.

Heavy British Imports of Steel in September—Exports Decline

WASHINGTON, Oct. 26.—Imports of iron and steel products into the United Kingdom in September exceeded exports by 285,486 gross tons, the largest tonnage excess of any month since the beginning of the coal strike, according to a report received by the Department of Commerce from Commercial Attaché William L. Cooper, London. While the proportion of British exports to imports has been falling since last June, September recorded the widest variation when exports were only 36 per cent of imports. Total British imports of iron and steel products in September aggregated 445,704 tons or 41.4 more than those of August, while exports fell to 160,218 tons, a decline of 5.6 per cent below those of the preceding month.

Canadian Output of Iron and Steel Higher in September

TORONTO, Oct. 26.—The production of pig iron in Canada for the month of September was 64,187 gross tons, which was 9 per cent over the 58,780 tons reported for the month of August, and was almost double the 34,609 tons made during the month of September, 1925. For the 9 months ended with September, the production of pig iron totaled 561,063 tons, which compares with 372,960 tons for the corresponding 9 months of last year.

The production of steel ingots and castings for the month of September at 58,837 tons marked an increase of 29 per cent over the output of 45,674 tons produced in August. While the production of direct steel castings fell off to 1673 tons in September from 2126 tons in August, the loss was more than offset by the increase in the production of ingots. For the first 9 months of the year, the cumulative production of steel ingots and castings amounted to 600,542 tons.

JAPAN BUYS PIPE

Tokio Company Buys Large Tonnage—Importers Quote Higher Prices

NEW YORK, Oct. 26.—Trade with Japan continues active with small lot purchases of tin plate continuing to accumulate and some of the large inquiries that have been in the market recently, placed with mills in the United States. The 1,290,000 ft. of black gas pipe for the Tokio Gas & Engineering Co. has been awarded to a large Japanese export house and will probably be divided between two large American makers. One Japanese export house recently placed about 300,000 ft. of 1-in. gas pipe with a large independent.

The market for light gage black sheets is quiet, although there are a number of inquiries on which bids have been submitted. Export buyers are of the opinion that lower prices might be obtained if a desirable specification were offered. The recent quotation of \$83 to \$85 per ton is believed to represent the maximum with \$82 to \$82.50 per ton, c.i.f. Japan, possible. The market on tin plate seems to range from \$4.60 to \$4.75 per base box for export business.

Since the increase by American mills of the export price of barbed wire, from \$2.80 per 100 lb., f.a.s. New York to \$3.25 per 100 lb., f.a.s. New York, trade has been extremely quiet and only recently a few small purchases have been made by South American consumers, possibly as a result of recent advances in the price of steel products on the Continent.

Importers of European steel in New York report a slightly smaller volume of business recently, probably as a result of the higher quotations that prevailed immediately prior to and since the formation of the International Steel Cartel. A further increase in Continental steel prices has brought the quotations on German bars to about 1.90c. per lb., c.i.f. duty paid for Thomas steel or 2c. per lb. or more for open-hearth quality. Importers are awaiting with interest the result of the investigation of German steel imports and their relation to "dumping," that is being made by the Treasury Department through port appraisers.

Fabricators Open Annual Meeting

(Concluded from page 1213)

establishment of equitable fire insurance rates, the welding of structural steel, windbracing, and other technical questions should be given close attention.

"By way of illustrating the possibility of new uses for our product we can point to the use of steel in residences, a development due in great part to our persistent featuring of the practicability of the steel frame house.

"The Jones & Laughlin Steel Corporation, the Massillon Steel Joist Co., and others have now perfected the use of steel sections for the frames of residences, and for the floors of all types of buildings. These innovations should interest all fabricators because of the possibilities they offer for new business, and because in the case of large commercial structures, steel floor construction in conjunction with a steel frame places the fabricator in a more favorable position in respect to costs as compared with those of competing materials."

Some of the other interesting topics discussed by Mr. Abbott will be included in the report of the convention as a whole, to appear in the next issue of THE IRON AGE.

The Hyman-Michaels Co., Chicago, has purchased the Grand Rapids, Holland & Chicago Railway for \$227,500. This line extends from Holland, Mich., to Grand Rapids, Macatawa and Saugatuck. The purchase includes 34 miles of double track, rolling stock, shops and real estate. The rolling stock consists of 14 heavy-type interurban passenger cars and freight equipment. The trackage and equipment will be taken out of service and dismantled.

British Steel Industry Has Problem

(Concluded from page 1204)

good account of themselves as soon as fuel is again available, and orders are meanwhile piling up.

* More Syndication Needed

British iron and steel industries are gradually being driven to regard themselves as a single industrial unit, and to aim at becoming, so far as possible, self-contained; but they have not progressed sufficiently to command an invitation to join the Continental cartel. At present there is a cleavage of interest between steel manufacturers and those re-rollers who depend upon imported steel. The revival of the South Wales tin plate and sheet steel industry is partly dependent upon imported bars, and this is a menacing feature. It is not improbable that in due course foreign competition will be concentrated upon the final product, and that British rolling mills (sheet and tin plate mills in particular) will eventually experience the same difficulty as some independents in the United States did in operating at a profit until they built their own steel works.

Two steps are worthy of serious consideration in British steel circles at the present time. The first is the formation of a syndicate or small group of syndicates in the industry; the second is the increase of technical efficiency by the closing of antiquated works and the erection of up-to-date plants in which the cost of transport will be reduced to the minimum and heat and power conserved. The second is conditioned by the first. Syndication could do much for owners under present conditions. For they admit that specialization in the matter of plant is not being pressed to nearly the extent that is already possible, and that cooperation on the part of the manufacturers in each of the existing steel regions would facilitate production and reduce costs. Moreover, the advantages of a unified organization for sales, with systematic research, advertisement on a large scale, and the cultivation of markets, are of the first order of importance.

Syndication, whether in the iron and steel industries of Britain or in those numerous other undertakings in which similar results might be expected, is by no means easy of achievement. In the first place, the temperament of the British manufacturer is intensely individualistic. He prefers independence with a modest competence to disciplined membership of a larger unit, even when it would make his income larger and more secure. But there is a considerable difference between a love of independence rooted in tradition and love of adventure which, in industry as well as in other spheres, was once regarded as a peculiarly British trait. And it is the former that constitutes the real obstacle to syndication.

Call for Large-Visioned Management

In the second place, a syndicated industry would demand qualities from the leaders which differ materially from those which are now necessary in industry. The commercial and administrative problems that arise in the course of business have hitherto been regarded in England as comparatively simple, and those whose claim to leadership rests solely upon technical or proprietary grounds have been expected to cope with them.

The problems of active management in Britain are changing with great rapidity, and there is much difficulty already in finding men capable of directing the many activities of amalgamated enterprises. British engineers tell us that satisfactory heads of departments can be found with ease, but that men capable of undertaking general business management are rare. Messrs. Austin and Lloyd are following up their initial

work in interpreting American practice to England by illustrating from their experience how English business men who are able to control the activities of two or three establishments are hopelessly lost when they are faced with the wholly different problem of directing the financial and commercial business of a combination owning a dozen or more establishments. Thence hang some sad British tales of recent origin. Similar difficulties we know were experienced in America when the great steel combinations were promoted; and not all of these have yet been overcome.

Britain has certainly not yet reached the limit in the size of a business organization which can be efficiently controlled by human beings. As the unit grows the function of management changes in character, but new needs usually produce leaders equal to them. There is no reason to doubt the ability of England to produce its own men for this purpose. But many of her business men have inherited businesses for the control of which they are not fitted either by nature or by training; they are content with far less than would have satisfied their abler and more venturesome fathers and grandfathers.

In addition, the business opportunities of the clever, ambitious but needy British youth have been enormously reduced by the growth in the average size of the business unit. But war time experience and general strike experience last spring have shown that when they really care the British people are still able to display those qualities of initiative and resource for which they have been famed.

Syndication for Efficiency

The nation is clearly on its trial under burdens which no other country we visited is carrying. Britain's system of private enterprise, too, is on its trial. It has, we believe, been unjustly blamed for much that is due solely to the war; but it will henceforth be judged by the manner in which it adapts itself to new needs. Private enterprise in steel or in any of the great basic industries of Europe or America is no longer, in the main, individual enterprise. It is the enterprise of groups working under severe discipline, and its keynote is not capitalism but management.

Group control in most countries has hitherto been exclusive in method and monopolistic in intention. The world needs increasingly, not nationalized industries, but a syndication in which monopoly, if it is present, will be merely incidental, and national efficiency the motive and the justification. We would not be surprised if some of Britain's European competitors in the steel industry were the first to set the example; even though the repeated suggestions of our far-seeing steel leader, Mr. Gary, looking toward intelligent international steel control, have not as yet been received with any marked favor.

Milwaukee Engineers Elect Officers

Arthur C. Flory, manager steam turbine department, Allis-Chalmers Mfg. Co., was elected president of the Engineers' Society of Milwaukee at the annual meeting on Oct. 20. The other new officers are: Vice-president, Alex H. Luedicke, chief engineer Gridley Dairy Co.; secretary, Robert Cramer, consulting engineer; treasurer, Walter R. Mueller, sales engineer; directors, Fraser Jeffery, Allis-Chalmers Mfg. Co.; John D. Maurer, general manager Illinois Steel Co., and Ralph Cahill of Cahill & Douglas, consulting engineers.

Among the ten of the seventy-five exhibitors at the recent four-day show of the Associated Industries of Massachusetts at the Copley-Plaza hotel, Boston, John Bath & Co., gages, and the Graton & Knight Co., leather products, received special commendation from an art jury appointed to pass on the products shown.

Machinery Markets and News of the Works

SOME GAIN IN ORDERS

Heavier Buying by Automotive Industry —Norfolk & Western Issues List

Sales Improve at Cincinnati While the Market Remains Dull in Other Centers

DIVERGENT reports regarding the machine tool market come from the different selling centers. There is greater activity at Cincinnati, where October sales are expected to equal those of September. In fact, at least three large Cincinnati manufacturers report that orders so far this month are running 25 to 40 per cent ahead of those of last month. Production in machine tool plants in that district has reached a fairly high point, and deliveries on some tools have lengthened to three months. The market situation is predominantly quiet at Chicago, Cleveland and Pitts-

burgh, and a slight improvement in business is noted at New York. In New England, October is likely to prove the leanest month this year, and machine tool builders are running largely on old orders.

In the West the automotive industry is proving the best source of new business. Dodge Brothers, Inc., Detroit, has closed for 56 gear hobbers, and other orders placed by motor car builders cover three automatic lathes, seven crankshaft lathes and eight automatic lathes respectively.

The list of the International Harvester Co. for its Fort Wayne, Ind., plant has been closed through the purchase of used equipment. At Pittsburgh the Board of Education has bought 51 tools for two schools. A list, which has been put out by the New York Edison Co., New York, includes 18 items.

In view of the recent dearth of railroad orders, a list which has been issued by the Norfolk & Western Railroad is of particular interest. It embraces 114 tools, covering the road's 1927 requirements.

New York

NEW YORK, Oct. 26.

THE past week has shown a slight improvement in machine tool business, with a fair volume of purchases and a few new inquiries. This activity, in a measure, promises to offset the rather quiet previous weeks of this month. Among inquiries in this district is the following list of the New York Edison Co. for the East Fourteenth Street station:

Three engine lathes: 36-in. x 18-ft., 24-in. x 12-ft. and 13-in. x 8-ft.
One 6-ft. radial drill
One sensitive drilling machine
One 6 x 6-in. power hack saw
One 18-in. cold saw
One 20-in. tool gun
One drill grinder
One emery wheel stand
One 24-in. shaper
One 2-in. bolt threading machine
One 200-ton hydraulic press
Two pipe threading machines
One small power hammer
One blacksmith's forge
Blacksmith's tools

The railroads continue to be moderate purchasers of single tools. The New York Central has closed for a double floor grinder, a hand milling machine, a gap lathe and two 16-in. geared-head lathes. The Rutland Railroad Co. has purchased a 36-in. x 18-ft. engine lathe.

Orders placed by industrial users included one for seven large Multi-Cut lathes. A motor car manufacturer in Pontiac, Mich., has taken an automatic lathe and another in Racine, Wis., a vertical shaper. A New York city manufacturer has purchased a 6-in. x 80-in. thread milling machine and a Jersey City company a 20-in. geared-head lathe. Other purchases include a gear generator by the Bucyrus Co., Milwaukee, a 6-in. x 20-in. thread milling machine by the Cincinnati Milling Machine Co., a 6-in. x 14-in. thread milling machine by the Kearney & Trecker Corporation, a jig borer by the International Harvester Co. and a 20-in. geared-head lathe by a Detroit tool maker.

Contract has been let by the American Can Co., 120 Broadway, New York, to the Turner Construction Co. for a new six-story plant, 125 x 200 ft., on Forty-third Street,

Brooklyn, to cost in excess of \$400,000 with machinery. E. G. Preiss is company architect.

The Le Mur Lighting Mfg. Co., 9 Walker Street, New York, manufacturer of lighting equipment, has leased a floor in the building at 334-44 Hudson Street, totaling 12,000 sq. ft., for expansion.

The Coldak Corporation, 8 West Fortieth Street, New York, manufacturer of electric refrigerating machines, is disposing of a note issue of \$1,150,000, a portion of the fund to be used for the purchase of the plant and business of the Alaska Refrigerator Co., Muskegon, Mich., and for extensions and betterments. The company is under the direction of the J. G. White Management Corporation, 33 Liberty Street, New York. John H. Pardee is president.

The New York Steam Corporation, 280 Madison Avenue, New York, is disposing of a preferred stock issue to total \$2,337,500, a portion of the proceeds to be used in connection with a new power plant now in course of construction, to cost approximately \$2,500,000 with equipment, and for which Thomas E. Murray, Inc., 55 Duane Street, is engineer. James D. Hurd is president.

The Servel Corporation, 51 East Forty-second Street, New York, manufacturer of electric refrigerating machines, has secured manufacturing rights in the United States of the von Platen-Munters gas-fired refrigerating equipment, a recent Swedish invention, and is arranging for early quantity production. Officials of the Consolidated Gas Co., 130 East Fifteenth Street, are interested in the Servel company.

The Sterling Casket Hardware Co., 333 Kent Avenue, Brooklyn, has awarded a general contract to Eugene F. Warwick, Crescent Plaza Building, Long Island City, for a new one-story plant, 210 x 310 ft., at Maspeth, L. I., to cost \$100,000 with equipment. Harry Harvie, 370 Seventh Avenue, New York, is architect.

The Air Reduction Co., Inc., 342 Madison Avenue, New York, has concluded arrangements for the purchase of the plant and business of the Dayton Oxygen & Hydrogen Products Co., Dayton, Ohio, and will continue operations as a branch factory.

The Federal Light & Traction Co., 52 William Street, New York, operating electric light and power properties in the West, is disposing of a bond issue of \$1,329,000, a portion of the proceeds to be used for expansion and betterments. E. N. Sanderson is president.

Cohen & Siegel, 45 West Fifty-seventh Street, New York, architects, have filed plans for a two-story automobile service, repair and garage building, 75 x 86 ft., to cost \$100,000 with equipment.

The Glaterer Wire Works, Inc., Hammonton, N. J., is said to be planning to rebuild the portion of its factory destroyed

by fire Oct. 15, with loss reported at close to \$30,000 including equipment.

The Ulster Iron Works, Inc., Dover, N. J., is arranging for the resumption of operations at its plant on Nov. 1, following a shut-down for a number of weeks, during which extensions and improvements have been made, including the installation of an electric conveyor system and other equipment. The plant will start up with a working force of about 350 men.

The Stockham Pipe & Fitting Co., 88 Thirty-fifth Street, Brooklyn, with main plant at Birmingham, has acquired property, 200 x 305 ft., at Hudson City, N. J., as a site for a new plant, for which plans will soon be drawn.

The Hansen-Van Winkle Co., Chestnut and Van Buren Streets, Newark, manufacturer of motors, dynamos, etc., is said to be arranging an expenditure in excess of \$350,000 for remodeling and equipping the former plant of the Atha Steel Works, Lister Avenue, recently acquired. Bids will be taken at once on general contract. The present business will be removed to the new location. Fletcher-Thompson, Inc., Bridgeport, Conn., and 415 Lexington Avenue, New York, is architect and engineer.

The E. B. Kelly Co., Inc., 235 Halsey Street, Newark, concrete machinery, has acquired property, 50 x 147 ft., at 293-95 Frelinghuysen Avenue, and will have plans drawn at once for a new two-story works to cost about \$30,000.

George La Monte & Son, 299 Kingsland Road, Nutley, N. J., manufacturer of special paper goods, has awarded a general contract to Henry M. Doremus & Co., 79 Orange Street, Newark, for a two-story addition, 100 x 100 ft., to cost \$50,000 with equipment. Fletcher-Thompson, Inc., Bridgeport, Conn., and New York, is architect and engineer.

J. Janitchek, 59 Lake Street, Jersey City, N. J., operating an iron foundry, has superstructure work nearing completion on a new one-story foundry, 50 x 75 ft.

Tracey Brothers, Inc., Englishtown, N. J., recently organized by William and George Tracey, Englishtown, has completed negotiations for the purchase of the plants and business of the Jamesburg Ice Co., Jamesburg, N. J., with main plant at Asbury Park, N. J., and branches at Helmetta and Spotswood. The artificial ice plant at Asbury Park was destroyed recently by fire with loss estimated at close to \$100,000 and the new owner is said to be planning for early rebuilding.

William E. Quimby, Inc., 5 Avenue C, Newark, manufacturer of electric screw and centrifugal pumps, has leased a one-story plant, 110 x 250 ft., to be erected by the Manufacturers' Developing Co. for a new main plant. The lease covers a plot, 125 x 400 ft., to provide for later expansion. The present works will be removed to this location. Gilbert Rathman is general manager.

Gokeler & Stanton, manufacturers and dealers in machinery and tools at 220 West Forty-second Street, New York, have been succeeded by Gokeler & Co. A. L. Gokeler is president.

The Automatic Safety Gas Lock Supply Corporation, 422 Jackson Avenue, Long Island City, has been organized with a capital stock of \$10,000. The company expects to have its manufacturing done by contract and is desirous of getting in touch with a plant equipped with automatic screw and other machinery to take up the manufacture of its safety gas lock.

The Manhasset Mfg. Co., Inc., 11 Kingston Avenue, Brooklyn, has been incorporated to manufacture a safety razor in the form of a toilet article. It contemplates leasing a factory shortly and has made all necessary arrangements for material and equipment.

The Manhattan Machinery Exchange, 30 Church Street, New York, after 35 years' business in used machinery, including the liquidation of plants, has incorporated with the following officers: President and treasurer, Theodore Friedberg; vice-president, Fred. Friedberg, and secretary, Adolph Friedberg. Theodore Friedberg, president, has sailed for a short vacation in Europe.

Buffalo

BUFFALO, Oct. 25.

PLANs have been filed by the Pierce-Arrow Motor Sales Co., 754 Main Street, Buffalo, for a one-story service, repair and parts shop to cost \$125,000 including equipment.

Thomas F. Farrell, commissioner of canals and waterways, State Public Works Building, 253 Broadway, Albany, N. Y., is asking bids until Nov. 16 for pumping equipment for a proposed subdrainage system in the old Genesee Valley canal bed, Rochester. Plans at the office noted, or at the offices of the division engineer, Department of Public Works, Utica, Syracuse, Rochester and Buffalo.

The Board of Education, Scottsville, N. Y., plans the installation of manual training equipment in its proposed two-

story high school estimated to cost \$200,000, for which superstructure will soon be placed under way. Carl Ade, 104 East Avenue, Rochester, is architect.

The General Railway Signal Co., West Avenue, Rochester, has secured a license from the Miller Train-Control Corporation for the manufacture of the Miller systems of train-control and train-stop devices, and will develop facilities for this line.

The Board of Water Commissioners, Greenville Water District, Greenburgh, N. Y., is asking bids until Nov. 1 for equipment for a water supply system, including a steel water tank and tower with capacity of 300,000 gal. Frank A. Rice is secretary.

Bids will soon be asked by Esenwein & Johnson, Ellicott Square, Buffalo, architects, for a four-story automobile service, repair and garage building, 91 x 170 ft., at Rochester, to cost about \$250,000 with equipment.

F. B. Davey, 53 West Falls Street, Niagara Falls, N. Y., is said to be at the head of a project to construct and operate a local rubber mill for the production of automobile tire specialties and kindred products, to cost about \$50,000 with equipment.

Chicago

CHICAGO, Oct. 25.

REPORTS as to the activity of the Chicago machinery market vary, but indications are that October business will fall below that of September. Orders the past week have fallen off. The lists of the Illinois Steel Co. and the General Electric Co., Fort Wayne, Ind., are still open. The Fort Wayne list of the International Harvester Co., has been closed through the purchase of used equipment in the Fort Wayne and Indianapolis districts. The city of Chicago is inquiring for a 12-in. and 16-in. lathe for its meter shops.

The Chicago & Illinois Midland Railroad will build a new car shop, 50 x 200 ft., at Taylorville, Ill.

The National Machine Works, 1559 Sheffield Avenue, Chicago, will build a one-story brick pattern shop, 50 x 147 ft., to cost \$16,000. W. D. Mann, 22 West Randolph Street, is the architect.

The New City Iron Works, 5401 South Western Boulevard, Chicago, will erect a one-story addition, 95 x 191 ft., to cost \$20,000. Dovell & Nets, 307 North Michigan Avenue, are the architects.

The New York Central Railroad Co., LaSalle Street Station, Chicago, will build a one-story brick power house, 26 x 47 ft., to cost \$18,000. The architect is H. W. Fenno, LaSalle Street.

The Otis Elevator Co., Quincy, Ill., has awarded a contract to Buerkin & Buerkin, Inc., Quincy, for a two-story addition, 60 x 80 ft., to cost about \$25,000. Headquarters are at Eleventh Avenue and Twenty-sixth Street, New York. George Gardner is manager at Quincy.

The Evanston Garage Corporation, Evanston, Ill., J. Hoffman, president, has awarded a general contract to John Traff, 3725 North Clark Street, Chicago, for a three-story and basement service, repair and garage building, 85 x 210 ft., to cost about \$375,000 with equipment. Maurice L. Bein, 64 West Randolph Street, Chicago, is architect.

The Board of Education, Mapleton, Iowa, has completed plans for a one-story manual training building estimated to cost \$20,000. Work will proceed at once. Thomas, McLennan & Thomas, Old Colony Building, Des Moines, Iowa, are architects.

The Salem Milling, Lighting & Heating Co., Salem, S. D., is having plans drawn for a new local central steam-operated power station, to cost in excess of \$75,000 with equipment. L. V. Schneider is president.

The St. Paul Roofing & Cornice Co., 31 West Water Street, St. Paul, Minn., has filed plans for the erection of a new one-story factory, 60 x 85 ft.

The Chicago, Milwaukee & St. Paul Railroad Co., 80 East Jackson Boulevard, Chicago, has plans for enlargements in its shops at Miles City, Mont., including installation of equipment in the steam power house, estimated to cost \$100,000.

The American Steel Foundries Co., 400 North Michigan Avenue, Chicago, has awarded a general contract to the Summer-Solitt Co., 307 North Michigan Avenue, for extensions and improvements in its plant at East St. Louis, Ill., to cost about \$50,000 including equipment. R. P. Lamont is president.

The Stockland Road Machinery Co., 3653 Thirty-fourth Avenue, South, Minneapolis, Minn., has awarded a general contract to the Madison Construction Co., National Building,

The Crane Market

NEW inquiry for overhead cranes continues extremely small, but a fair volume of demand for locomotive cranes is reported. Among pending orders are the seven locomotive cranes for the New York Central Railroad and one locomotive crane for the city of Newark. The St. Regis Paper Co., Watertown, N. Y., which was in the market for two locomotive cranes, closed on one this week. The Fleischmann Co., New York, transportation department, is understood to have been accepting prices on a 5-ton overhead crane for the West.

Among recent purchases are:

Delaware, Lackawanna & Western Railroad, New York, a 35-ton, 4-motor gantry crane from the Shaw Electric Crane Co.

McRae Lumber & Mfg. Co., Quincy, Fla., a log loading crane from the American Hoist & Derrick Co.

Great Northern Railroad, St. Paul, Minn., a used 25-ton American locomotive crane from the American Hoist & Derrick Co.

W. P. Brown & Sons Lumber Co., Louisville, Ky., 12-ton locomotive crane from the American Hoist & Derrick Co.

St. Regis Paper Co., Watertown, N. Y., a 25-ton locomotive crane from the Industrial Works.

Heintz Mfg. Co., Philadelphia, a 2-ton, 27-ft. span magnet handling overhead crane from the Box Crane & Hoist Corporation.

Metal & Thermit Corporation, Chrome, N. J., two 3-ton, 27-ft. span geared trolleys from the Box Crane & Hoist Corporation.

National Tube Co., Pittsburgh, a 10-ton, 87-ft. span crane for the Ellwood City works, from the Alliance Machine Co.; a 10-ton, 60-ft. span grab bucket crane for the McKeesport works, from the Shaw Electric Crane Co.; and one 75-ton ladle crane trolley, one 7½-ton, 52-ft. span crane with 5-ton auxiliary, one 25-ton crane with 7½-ton auxiliary and one 40-ton crane with 10-ton auxiliary from the Alliance Machine Co. and a 7½-ton bucket crane, all for the Lorain works, from the Morgan Engineering Co.

Weirton Steel Co., Weirton, W. Va., a 10-ton, 25-ft. span crane for a motor room, from the Shaw Electric Crane Co.

American Sheet & Tin Plate Co., Pittsburgh, a 10-ton crane for its Scottdale works, from the Cleveland Crane & Engineering Co.

Pittsburgh Screw & Bolt Co., Pittsburgh, a 5-ton, 60-ft. span crane from the Alliance Machine Co.

for a one-story addition, 53 x 100 ft., with extension, 34 x 34 ft.

The American Gas Machine Co., Albert Lea, Minn., manufacturer of gasoline lighting, heating and cooking appliances, has under construction the first unit of a group of factory buildings which in providing about four acres of additional floor space will more than double the capacity of the present plant. The new building will be given over almost entirely to the manufacture of Kitchenkook stoves. When completed and equipped the new plant will represent an investment of approximately \$1,000,000.

The Pneumatic Elevator Mfg. Co., Wells, Minn., has been incorporated under Delaware laws with a capital stock of \$500,000 to manufacture a small portable pneumatic grain elevator. The company is looking for a factory site and when located will be in the market for machinery and other equipment. H. C. Seedorf is president and E. L. Soland, secretary.

Neff Kohlbusch & Bissell, machine tools, Chicago, have moved from 1945 West Washington Boulevard to 806 West Washington Boulevard.

Lee & Clark, 549 Washington Boulevard, Chicago, have been appointed representatives in the Chicago district for the Pennsylvania Pump & Compressor Co., Easton, Pa.

Cincinnati

CINCINNATI, Oct. 25.

CONSIDERABLE business was placed the past week with local machine tool builders, automobile makers in the Detroit district being the most important buyers. Sales in October are expected to equal those in September. In fact, at least three large manufacturers report that orders this month are from 25 to 40 per cent ahead of those for September. While companies in the general industrial field have contributed liberally to the total volume of new business, the automotive industry is by far the best source of orders. Dodge Brothers, Inc., is understood to have purchased 56 gear hobbors from an Eastern machine tool company. In addition, three other Detroit manufacturers have contracted for equipment locally. One company closed for three automatic lathes, while another has bought seven crankshaft lathes. An Eastern automobile company has taken eight automatic lathes. Included in recent purchases by Detroit companies have been a number of drilling machines. Several manufacturers in the automotive industry are figuring on machinery to be bought next month.

Production locally has reached a fairly high point. Deliveries have lengthened in some cases to three months. Operations are expected to be well sustained during the next few weeks.

The Norfolk & Western Railroad is asking for bids on 114 machine tools covering its 1927 requirements. Otherwise,

inquiries from carriers are light. The Hudson Coal Co., Scranton, Pa., is the buyer of a 60-in. x 23-ft. engine lathe and the Roxana Petroleum Corporation, St. Louis, has purchased a 600-lb. single frame steam hammer. A local builder has received an order for four automatic lathes for export. The General Electric Co. and the New York Central each have bought a Ransom motor-driven grinder, and a New Jersey company has contracted for a radial drill.

Norfolk & Western Railroad List

All machines to be equipped for motor drive, 220-volt, 3-phase, 60-cycle, the motors to be of General Electric, Westinghouse or Allis-Chalmers make. Bids on equipment will be received by Clyde Cocke, purchasing agent, Roanoke, Va., Nov. 2.

One No. 6 automatic bar machine, similar to Brown & Sharpe.

One 84-in. vertical boring mill.

One horizontal boring and drilling machine with 3½-in. bar.

One combination saw filing, setting and jointing machine, similar to model K made by the Wardwell Mfg. Co.

One No. 3 metal band saw, similar to Atkins.

One table-type full universal cold saw cutting-off machine with inserted tooth saw blade; capacity 9-in. sq.

Three forge blowers with 5-in. outlet, similar to Buffalo No. 4-E.

One table-type full universal cold saw cutting-off machine with inserted tooth saw blades; capacity 12-in. rounds.

One jig borer, similar to Pratt & Whitney.

Two 1½-in. DH bolt threaders with complete set right-hand dies.

One 2½-in. DH bolt threader with complete set right-hand dies.

One bending roll for plates 8 ft. x ½ in.

One precision centering machine to center pieces up to 16-in. in length.

Four 16-in. sensitive drills.

Two 16-in. vertical single-spindle high speed drills with tapping attachment.

One 36-in. vertical single spindle drill press with tapping attachment.

Four 3-ft. plain radial drills with tapping attachment.

One 5-ft. plain radial drill with tapping attachment.

Seven 12-in. x 2½ in. double floor grinders.

Nineteen 18-in. x 3-in. double floor grinders.

One 16-in. x 24-in. cylindrical grinder.

One grinder similar to Rumsey type KM.

Three Blacker type B power hammers.

Seven 1-ton electric chain hoists, 8-ft. lift.

Two 12-in. x 3½-ft. geared-head engine lathe.

Two 14-in. x 3½ ft. geared-head engine lathe.

One 16-in. x 6-ft. geared-head heavy-duty engine lathe.

One 16-in. x 3½-ft. geared-head heavy-duty tool room lathe.

One 18-in. x 6-ft. geared-head heavy-duty engine lathe.

One 18-in. full universal brass lathe.

One 20-in. x 6-ft. geared-head heavy-duty engine lathe.

One 22-in. x 6-ft. geared-head heavy-duty engine lathe.

One 27-in. x 16-ft. geared-head heavy-duty engine lathe.

One 24-in. x 10-ft. geared-head heavy-duty engine lathe.

One 32-in. x 8-ft. geared-head heavy-duty engine lathe.

One engine truck and trailer wheel lathe for turning truck and trailer wheels mounted, 50-in. diameter of tread, 8-ft. 10-in. length of axle.

One driving wheel journal turning lathe suitable for inside and outside journals, but without crank pin turning attachment.

One bench jointer with 42-in. table.

One 30-in. x 30-in. x 12-ft. slab milling machine.

One Van Norman universal tool room milling machine.

One spline milling machine, capacity up to 6-in. diameter.

Five 50-ton power forcing presses for locomotive rod and driving box brasses.

Two 32-in. x 32-in. x 32-in. crank planers.

One 36-in. x 36-in. x 12-ft. open-side planers.

One 43-in. x 24-in. x 14-ft. heavy-duty frog and switch planer.

One 24-in. throat punch and shear.

One Landis roller pipe cutter.

Five 3/4-in. to 2-in. pipe threading machines with complete set right-hand dies.

One 12-in. Dill slotter.

One universal vertical tool and die shaping machine, similar to Hanson-Whitney.

One 24-in. crank shaper.

One Walter stock adjusting machine.

Two 36-in. crank shapers.

In addition to the foregoing tools, bids are being taken on the following machinery:

One static and dynamic armature ballancing machine to swing 24-in. diameter, maximum length of shaft 60-in.

Three fuel oil rivet heating forges, vacuum burner, fire-brick lined, mounted on two wheel truck, heating chamber approximately 7-in. x 10-in., approximately 20-gal. oil capacity.

One 2000-lb. single leg steam hammer.

Two jolt power-squeeze roll-over and draw molding machines, to make cope and drag at same time; size of flask, 14-in. x 18-in.

The National Automat Service, Inc., Dayton, Ohio, has been organized to develop the manufacture of an automatic vending machine invented and patented by R. H. Baker. Plans for the establishment of a local factory are under consideration.

The International Tool Co., 138 Madison Street, Dayton, Ohio, designer and builder of special tools and machinery, is considering the erection of a factory on a three-acre site on Overlook Avenue. The cost is estimated at \$250,000. J. J. Kohl is president.

The Federal Fluorspar Co., 312 South Sixth Street, Louisville, has plans for the development of about 200 acres of fluorspar properties, to include the installation of a grinding mill, power house, air compressors and auxiliaries. The entire plant is estimated to cost \$60,000.

The Yardley Screen & Weatherstrip Co., 715 Gustavus Lane, Columbus, Ohio, is asking bids on a general contract for a new one-story plant, 100 x 320 ft., to cost \$70,000 with equipment. Snyder & Babbitt, 16 East Broad Street, are architects.

The Kentucky Utilities Co., Louisville, is said to be planning extensions in its power house at Somerset, Ky., and the installation of additional equipment. Extensions will be made also in transmission lines.

E. L. Harrison, Fidelity Bank Building, Memphis, Tenn., architect, has preliminary plans under way for a new automobile service, repair and garage building to cost about \$100,000 with equipment.

The Board of Education, Lexington, Ky., contemplates the installation of a manual training department in its new senior high school, reported to cost about \$300,000, for which bids will be asked at once on a general contract. Warner & McCornack are architects; Robert McMeekin, Lexington, is associate architect.

The Southern Cities Power Co., Chattanooga, Tenn., is completing plans for the early construction of two new electric generating stations on the Duck River, about 10 miles from Lewisburg, and near Shelbyville, Tenn., to cost in excess of \$225,000. Transmission lines will be built. Freeland, Roberts & Co., Independent Building, Nashville, Tenn., are architects and engineers.

The American Holst Corporation, 518 Hamilton National Bank Building, Chattanooga, Tenn., has leased the building and adjoining site at Fourteenth Street and the Belt Railway for a new plant. A preferred stock issue of \$100,000 has been arranged, a portion of the fund to be used for the new plant. O. B. Gladish is general manager.

The Arctic Ice Co., Paintsville, Ky., is contemplating the construction of a new plant, to cost about \$50,000 with equipment.

The W. M. Dean Marble Co., Columbia, Tenn., is considering the erection of a new one-story plant, 100 x 150 ft., at Nashville, Tenn., to cost approximately \$55,000 with equipment.

New England

Boston, Oct. 25.

SALES reported by local dealers the past week were the smallest for any similar period this month. Indications are that October sales will compare unfavorably with previous months this year. New inquiries have fallen to a minimum and many companies heretofore interested in new equipment have intimated that purchases will be put off until after the first of the year. Small tools are in fair demand, but the aggregate for the week is somewhat smaller than for the corresponding period last month.

The status of New England machine tool builders has not changed noticeably the past week. Plants that have been busy continue so, but largely on old orders. New business is coming in slowly from points outside of New England. It is believed that some builders will continue operations on present schedules the remainder of 1926, at least.

Bids close Oct. 29 for an engine house at Worcester, Mass., for the Boston & Albany Railroad. Plans are private.

The Thompson Electric Welding Co., 161 Pleasant Street, Lynn, Mass., has awarded a general contract for a one-story, 57 x 91 ft. addition. Haven & Hopkins, 11 Beacon Street, Boston are the architects.

Ted-Toylers, Inc., Union Street, New Bedford, Mass., contemplates the erection of a four-story toy manufacturing plant to cost \$100,000. E. V. Babbitt is treasurer and general manager. The architect has not been selected.

The Public Service Co. of New Hampshire, Inc., Manchester, N. H., recently formed by Samuel and Martin J. Insull of the Commonwealth Edison Co., 72 West Adams Street, Chicago, and other utilities, is disposing of a preferred stock issue of \$3,239,500, the proceeds to be used in part for a consolidation of a number of light and power properties in this section and for expansion. Walter S. Wyman is president.

The Eagle Construction Co., 80 Bishop Avenue, Bridgeport, Conn., has plans under way for a new factory for the manufacture of portable metal houses, to cost close to \$50,000 with equipment.

The Vermont Machine Corporation, Bellows Falls, Vt., has been organized to take over the former local plant of the Vermont Farm Machine Corporation, recently acquired at a receiver's sale by E. C. Townshend for more than \$505,000. The new owner will continue the former line and purposes to develop for affiliated branches of equipment. Mr. Townshend will be head of the new organization. He was formerly vice-president and general manager of the Crane Co., Montreal.

The supervising architect, Treasury Department, Washington, is asking bids until Nov. 2 for a deep-well pumping plant at the post-office, Bangor, Me.

The Goss & DeLew Machine Co., New Britain, Conn., has taken out a permit for a one-story machine shop addition, 60 x 120 ft.

The Norwich Gas & Electric Co., Norwich, Conn., is said to be completing plans for a new hydroelectric power house, estimated to cost \$100,000 with machinery. Extensions will be made in transmission lines.

F. A. Norcross, 46 Cornhill Street, Boston, architect, will soon begin the construction of a new automobile service, repair and garage building at Gainsboro and St. Botolph Streets, to cost \$200,000 with equipment.

The Perfection Grate & Supply Co., 164 Birnie Avenue, Springfield, Mass., is considering the construction of a one-story foundry addition to cost \$45,000 with equipment.

The Department of Correction, Boston, Edward C. R. Bagley, deputy commissioner, is completing plans for a one-story foundry at the State prison at Charlestown, for the production of iron castings, estimated to cost \$35,000 with equipment.

The American Electrical Works, Philippsdale, R. I., manufacturer of bare and insulated wire, will proceed with the construction of two one-story additions, for which contract recently was let to the Rowley Construction Co., Pawtucket, R. I.

The W. & H. Nut Co., Detroit, has removed its plant to Westfield, Mass., and will operate a nut and bolt works at the latter place with increased capacity.

The Boston office of the Link-Belt Co. will move Nov. 1 from 49 Federal Street to larger quarters at 1102-1104 Statler Building. W. J. Burnell is in charge.

Pittsburgh

PITTSBURGH, Oct. 25.

THE Pittsburgh Board of Education has placed most of the 51 tools required for the Taylor Allderdice High School and the Arsenal Vocational School. Awards were widely scattered. The machine tool market is quiet otherwise, and runs largely to single orders. Considerable business is before the trade, but buyers are moving slowly. New inquiries are of small volume.

The Charleroi Steel & Foundry Co., Charleroi, Pa., recently organized, has acquired the former local plant of the Electric Alloy Steel Co. for about \$125,000. Improvements and the installation of additional equipment are contemplated. The new company is capitalized with \$150,000 in bonds, \$150,000 preferred stock, and 5000 shares of common stock. W. D. Myers, formerly secretary-treasurer of the Electric Alloy company, is president of the new organization.

The Kay Research Corporation, Union Trust Building, Pittsburgh, has plans for a new works at West Nyack, N. Y., for the manufacture of processing apparatus for denaturing alcohol under an improved method. It will be one-story, 60 x 100 ft., and will cost about \$40,000. Contract for building has been let to Beers-Tapman, Inc., 15 Park Row, New York.

The Oil Well Supply Co., 215 Water Street, Pittsburgh, has plans for a one-story addition, 45 x 250 ft., to cost about \$45,000.

The Fairmont Mfg. Co., Fairmont, W. Va., organized with a capital stock of \$200,000, is said to have completed negotiations for the acquisition of the local plant of the West Virginia Metal Products Co. The works will be remodeled for an aluminum mill. The majority of apparatus will be electrically-operated. William J. Adams heads the new company. C. J. Wolfe is plant manager.

The Ingram-Richardson Co., College Hill, Beaver Falls, Pa., manufacturer of enameled iron signs, etc., has awarded a general contract to Leroy Freed, 717 Thirteenth Street, for its one-story addition, 50 x 60 ft. J. E. Martsoff, New Brighton, Pa., is architect.

The Displayola Corporation, 281 Rider Avenue, New York, manufacturer of display cases, cabinets, etc., is said to be arranging for the establishment of a branch plant at Bellview, Fairmont, W. Va. Matthew Friedman is head.

The Howe Scale Co., 110 Wood Street, Pittsburgh, has leased the building at 14-16 East Lacock Street, effective May 1, 1927, where it will concentrate all local operations.

The Union Radiator Co., Johnstown, Pa., has awarded a general contract to the Wilson Construction Co., Johnstown Trust Building, for a one-story foundry addition, 84 x 125 ft., to cost close to \$60,000. C. C. Good is general manager.

The Guyan Machine Shops, Logan, W. Va., have been making inquiries for a 2 to 3-ton electric-operated hoist; a punch press and shearing machine to handle 1/2-in. plate, and several electric motors from 2 to 20 hp.

The Pennzoil Co., Oil City, Pa., refined oils, has plans for an addition to its plant at Rouseville, Pa., one-story, 50 x 100 ft., to cost \$45,000 with equipment.

Detroit

DETROIT, Oct. 25.

BIDS have been asked by the Tannewitz Works, Inc., Grand Rapids, Mich., manufacturer of saw benches, etc., for a one-story addition, 50 x 100 ft., to cost about \$30,000 with equipment. Pierre Lindhout, Michigan Trust Building, is architect. Edward Tannewitz is head.

The Common Council, Dearborn, Mich., is said to be planning the installation of pumping equipment in connection with extensions and improvements in the municipal water system, for which a bond issue of \$500,000 has been approved.

The Morse Chain Co., Detroit, manufacturer of silent chain drives, has work in progress on a two-story addition to its plant to double the present capacity. F. C. Thompson is local manager. Headquarters are at Ithaca, N. Y.

The National Smelting & Refining Co., 1842 Livernois Avenue, Detroit, has asked bids on a general contract for its new plant at Ecorse, Mich., consisting of two one-story structures, 60 x 200 ft. and 70 x 150 ft., to cost \$100,000 with equipment. Murphy & Burns, 3456 Cass Avenue, are architects and engineers.

The Reo Motor Car Co., Lansing, Mich., has broken ground for a new two-story and basement unit, 100 x 500 ft., to be used for its bus and motor truck divisions, to cost about \$200,000 with equipment.

The Detroit City Gas Co., Clifford Street, Detroit, has awarded a general contract to Walbridge & Aldinger, Penobscot Building, for a one and two-story service and maintenance building, 50 x 115 ft. and 58 x 130 ft., with repair and garage department, to cost \$115,000 with equipment.

The Ternstedt Mfg. Co., 6307 West Fort Street, Detroit, manufacturer of automobile hardware, has plans for a three-story and basement extension to cost in excess of \$500,000 with equipment.

The Wilcox Products Co., Saginaw, Mich., recently organized, has taken over the Wilcox Motor Parts & Mfg. Co., with local plant, and plans expansion. It is purposed to construct an addition to the Saginaw mill and also to make extensions in the Detroit works. The Intra-Steel Products Co., Detroit, manufacturer of automotive equipment, has secured an interest in the company and will be active in the management. The new company will develop facilities for the manufacture of piston rings, valves and kindred specialties.

The Howell Electric Motors Co., Howell, Mich., has awarded a general contract to the Bowyear Construction Co., Hillsdale, Mich., for its one-story addition, 40 x 200 ft., estimated to cost \$50,000 with equipment. R. S. Gerganoff, Moffat Building, Detroit, is architect. C. F. Norton is vice-president and general manager.

The Ready Power Co. has moved from 5626 McGraw Avenue, Detroit, to its own plant at 3820 Grand River Avenue, that city, thus expanding floor space facilities for making gas electric power units designed to replace storage batteries and charging equipment on lift trucks.

The American Machinery & Equipment Co., Detroit, has moved its offices to 2532 Twenty-fourth Street.

The address of the Detroit Steel Corporation has been changed from 11801 Oakwood Boulevard to 971 South Oakwood Avenue.

Cleveland

CLEVELAND, Oct. 25.

MACHINERY sales in this territory are holding up to about recent volume. A local dealer the past week booked orders for three or four lots aggregating a dozen or more machines, but business for the most part is confined to single tools for which there is a fair demand. Turret lathes continue to move in steady volume, but orders are almost entirely for single units. The volume of business in October will show little change compared with that in September.

Very little buying is being done by the automotive industry. Some car builders, however, are going ahead with expansion programs and while considerable machinery for these extensions was bought some time ago, it is expected that additional equipment will be required. The trade also looks for a good demand from this source in the next few months for making new models. Business from the railroads is limited to small single machines.

The Cleveland Railway Co., Hanna Building, Cleveland, will take bids shortly for a repair shop at West 117th Street. David Morrow, 4500 Euclid Avenue, is the architect.

The Firestone Tire & Rubber Co., Akron, Ohio, will take bids soon for a four-story factory, 60 x 180 ft.

Kenyon V. Painter will erect a two-story factory building, 51 x 167 ft. at 1966 East Sixty-sixth Street, Cleveland, which will be occupied by the Simplex Piston Ring Co.

The F. C. Thornton Co., 6712 Union Avenue, Cleveland, sheet metal worker, has placed contract for a one-story addition, 40 x 60 ft.

The New York Central Railroad is planning the erection of a 25 x 200 ft. car repair shop at its Collinwood shops, Cleveland.

The St. Bernard Mfg. Co., St. Bernard, Ohio, recently incorporated, will build a carwheel foundry equipped with one cupola with a melting capacity of 60 tons per day. Henry S. Sherman, president of the Standard Car Wheel Co., Cleveland, is president, treasurer and manager of the St. Bernard company.

The Superior Iceless Refrigerator Co., Inc., Cleveland, has been organized by a group of Cleveland men who have taken over a plant manufacturing iceless refrigerating equipment in Wapakoneta, Ohio, formerly owned by Senator Couzens of Detroit. John C. Sanders is president; Edward L. Frantz, chairman Apex Electric Mfg. Co., Cleveland, is first vice-president; Charles F. Carroll, second vice-president in charge of sales and Herman R. Neff, secretary. The new

company is considering moving the plant to a different location.

The Foster Bolt & Nut Mfg. Co., with plants in Cleveland and Chicago, has installed a new heat-treating department in its Cleveland plant at a cost of \$72,000.

Indiana

INDIANAPOLIS, Oct. 25.

PLANs are being considered by the Perfect Circle Co., Hagerstown, Ind., manufacturer of piston rings, etc., for a new branch foundry and plant at Newcastle, Ind., one story, to cost \$30,000 with equipment. Lathan Teeters is general manager.

The United States Engineer Office, Louisville, has plans under way for a new power house at the Ohio River dam No. 47, at Newburgh, Warrick County, Ind., to cost \$35,000.

The Reliance Specialty Co., 548 South West Street, Indianapolis, manufacturer of metal goods, has awarded a general contract to the Universal Construction Co., 1925 Massachusetts Avenue, for a new one-story plant, 42 x 165 ft., to cost approximately \$45,000 with equipment.

The Brant Radio Power Co., Indianapolis, recently organized to manufacture a complete radio power unit, is negotiating through the Chamber of Commerce, for lease of a building totaling about 10,000 sq. ft. of floor space, for the establishment of a new plant. Next summer the company expects to begin the construction of a new plant, with close to 100,000 sq. ft. of floor area. Gustave A. Schnull will be president; W. L. Everett, vice-president and general manager, and Murat W. Hopkins, attorney, secretary and treasurer. Mr. Everett is designer of the new power unit and will be in active charge.

The Ross Gear & Tool Co., Lafayette, Ind., has awarded a general contract to A. E. Kemmer, Third and Brown Streets, for its one-story machine shop addition, 55 x 100 ft., to cost \$55,000 with equipment. Walter Scholer, Painters' & Decorators' Building, is architect.

Merger plans are being considered by the Indianapolis Light & Heat Co. and the Merchants' Heat & Light Co., both operating at Indianapolis and vicinity. The consolidation will represent a combined capital of about \$40,000,000. It is purposed to make extensions, including the installation of additional equipment and transmission line construction. Norman Perry is president of the first noted utility.

The Board of Education, New Albany, Ind., is considering the installation of manual training equipment in its proposed two-story and basement high school to cost \$300,000, for which bids are being asked on a general contract until Nov. 6. W. C. Findt, High School Building, Springfield, Ohio, is architect.

Philadelphia

PHILADELPHIA, Oct. 25.

A GENERAL contract has been let by the Imperial Type Metal Co., 1220 Howard Street, Philadelphia, manufacturer of printers' equipment and supplies, to Roberts & Roller, 1700 Walnut Street, without competition, for a one-story and basement plant on site lately secured. It is expected to begin work early in the coming year. Wilson S. Yeager is head.

The Francis Electrical Co., Philadelphia, has leased the three-story building at 126 North Sixth Street, and will establish a new works and distributing plant.

The Hoffman-Henon Co., Finance Building, Philadelphia, architect, has plans under way for a three-story automobile service, repair and garage building, 108 x 115 ft., to cost close to \$200,000 with equipment.

Gabriel B. Roth, 1629 Chestnut Street, Philadelphia, architect, has completed plans for a two-story automobile service, repair and garage building, 85 x 125 ft., at 1706-18 Fairmount Avenue, to cost approximately \$230,000 with equipment.

The Atlantic Refining Co., 260 South Broad Street, Philadelphia, has acquired about 5½ acres on the Allegheny River at Pittsburgh, adjoining its refinery, for expansion.

The Pennsylvania Railroad Co., Philadelphia, has awarded a general contract to W. F. Trimble & Sons, 1719 Pennsylvania Avenue, Pittsburgh, for three one-story structures, 78 x 120 ft., 60 x 100 ft., and 46 x 50 ft., at Shire Oaks, near Elrama, Pa., to cost approximately \$350,000 with equipment.

J. E. Fieldstein, Otis Building, Philadelphia, architect, has asked bids on a general contract for a new two-story service, repair and garage building, 65 x 150 ft., to cost \$100,000 with equipment.

The School Board, Borough of Clayton, N. J., is consider-

ing the installation of manual training equipment in its proposed two-story and basement high school, to cost \$170,000. Ritter & Shay, Packard Building, Philadelphia, are architects.

The National Radiator Co., Central Avenue, Johnstown, Pa., will proceed with a foundry addition at New Castle, Pa., 135 x 300 ft., to cost in excess of \$175,000 with equipment. General building contract recently was let to the H. K. Ferguson Co. J. H. Waters is president.

The Pennsylvania Railroad Co., Philadelphia, is reported to be completing plans for the electrification of its line in the vicinity of Parkesburg. A proposition is also said to be under advisement for a continuation of the electrification work to Paoli, Lancaster and vicinity. E. B. Temple is chief engineer. The entire project will cost more than \$1,000,000.

The Parkesburg Iron Co., Commercial Trust Building, Philadelphia, manufacturer of boiler tubes, etc., has closed its plant at Parkesburg, Pa., for an indefinite period.

The Board of Education, Norristown, Pa., has awarded a general contract to A. J. Kinsella, 35 East Marshall Street, for proposed additions and improvements in the two-story and basement vocational school, estimated to cost about \$40,000. E. Lane Crawford, Curran Arcade, is architect.

The Delaware & Hudson Railroad Co., 32 Nassau Street, New York, is arranging an appropriation of about \$275,000 for extensions and improvements in its yards and shops at Carbondale, Pa., and Oneonta, N. Y. A new light car repair shop and yard will be established at the first noted place; additions will be made in the car shops at Oneonta and additional equipment installed.

The following companies have been appointed district distributors for Adamant fire brick cement, a product of the Botsfield Refractories Co., Philadelphia: The Westwater Supply Co., 150 North Third Street, Columbus, Ohio; the Klinger-Dills Co., 129-131 North Jefferson Street, Dayton, Ohio; the Coan Equipment Co., 236-242 Murray Street, Fort Wayne, Ind.; the Cleveland Tool & Supply Co., 1427-1437 West Sixth Street, Cleveland, the latter effective Nov. 15.

South Atlantic States

BALTIMORE, Oct. 25.

CONTRACT has been awarded by the Central Armature Works, Inc., 635 D Street, N. W., Washington, to Bahen & Wright, 1214 New York Avenue, N. W., for a new three-story plant, 30 x 200 ft., to cost about \$75,000.

The Tin Decorating Co., Boston and Linwood Streets, Baltimore, has begun the erection of a one-story addition, 150 x 200 ft., to cost approximately \$30,000. Arthur A. Morae is president.

A. P. Clark, Jr., 811 Fourteenth Street, N. W., Washington, architect, has plans under way for a three-story automobile service, repair and garage building, 130 x 135 ft., to cost about \$200,000 with equipment.

The McKensie Brick Works, Asheville, N. C., plans the early installation of a single drum steam hoist for handling clay cars.

The Western Maryland Railway Co., Baltimore, will continue its car and locomotive shops at Hagerstown, Md., and will not remove to Union Bridge, Md., as reported recently. The company has lately acquired additional land at Union Bridge for shop expansion.

The Mooresville Furniture Co., Mooresville, N. C., is inquiring for a quantity of wood-working machinery, including boring machine, sanding machines, jointers, cut-off saws, etc. The company is rebuilding the portion of its plant recently destroyed by fire, with main unit, 60 x 200 ft. R. W. Troutman is secretary.

The Washington Suburban Sanitary Commission, 1420 New York Avenue, N. W., Washington, plans the installation of a pumping plant at Burnt Mills, Md., in connection with extensions in water system at that place. The entire project will cost about \$500,000. R. B. Morae, Hyattsville, Md., is engineer.

The Great Valley Anthracite Corporation, Calvert Building, Baltimore, will install additional mining machinery and other equipment at its coal properties at McCoy, Va. E. C. Searies is president.

The Atlanta Blow Pipe Co., Atlanta, Ga., has removed its plant from 363-5 Marietta Street to larger quarters at Marietta and Thurmond Streets and expects to more than triple the former capacity, specializing in the production of blow pipe systems, smoke stacks and general sheet metal work. Hoyt West is president, and R. R. West, secretary and treasurer.

The Board of Commissioners, Kernersville, N. C., is asking bids until Nov. 23 for equipment for the municipal waterworks, including raw water pumping station, water purification plant of 1,000,000 gal. capacity, and complete accessories.

The Carolina Engineering Co., Johnston Building, Charlotte, N. C., is engineer. D. W. Harmon is clerk.

The General Gas & Electric Corporation, 50 Pine Street, New York, has concluded negotiations for the purchase of the Melrose Power & Mfg. Co., Tryon, N. C. Plans are under consideration for extensions.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a steel tank, capacity about 50,000 gal., mounted on steel tower, 75 to 100 ft. high; also for an 80-hp. horizontal return tubular boiler, and a 50-hp. boiler, mounted on wheels, without engine.

The J. M. Tatem Handle Co., Eastford, Conn., is said to be arranging for the early establishment of a branch plant at Reidsville, N. C., for the manufacture of handles for picks, axes, etc. The factory will be operated in the name of the North Carolina Hickory Mfg. Co., a subsidiary organization.

The E. E. Child Co., Spartanburg, S. C., recently formed with a capital of \$150,000, has acquired a building at 370 Union Street and will remodel for the manufacture of textile machine equipment and parts. The company proposes to construct an entirely new plant later. E. E. Child is head.

Milwaukee

MILWAUKEE, Oct. 25.

LOCAL call for machine tools is fair. Many small shop extensions being made or planned require small lists of equipment, but few large projects are being undertaken. Builders of equipment are busy and capacity is comfortably occupied for the remainder of the year. Orders come from a wide variety of sources and usually call for one or two items. Export sales are relatively good. Inquiries give promise of a continuance of the present general demand.

The Chain Belt Co., Milwaukee, has broken ground for a new engineering building, the third unit of its West Milwaukee works, which eventually will replace the original plant at Sixteenth and Park Streets. The new unit will be 120 x 308 ft., with an office 144 ft. wide, and will be self-contained, devoted exclusively to the manufacture of contract engineering work, such as conveyors, elevators, traveling water screens, bunkers, hoppers and general steel structural work. Eight electric traveling cranes are among the items being purchased. The building now used by the contract engineering department will be added to the chain shop upon the completion of the new unit.

The Koehring Corporation, 3100 Concordia Avenue, Milwaukee, manufacturer of concrete mixers, paving outfits, etc., is building an addition, 58 x 100 ft., costing about \$25,000 equipped. The work is being done by H. Schmitt & Son, Inc., 14 Burleigh Street, local.

The White Co., Cleveland, has let the complete contract to Paul Riesen's Sons Co., 1018 Humboldt Avenue, Milwaukee, for erecting the new \$250,000 headquarters building of the Milwaukee White Co., on Clybourn Street. It will be of brick and steel, 170 x 200 ft. H. Ralph Hadlow, Cleveland, is engineer in charge.

The LeRoi Motor Co., Sixtieth Avenue and Mitchell Streets, West Allis, Milwaukee, manufacturer of high speed gasoline engines, self-contained generating plants, etc., is making an extension to its machine shop which will cost about \$25,000 complete. J. Roy Frantz is works manager.

Dornacker & Schafer, 713-715 Twelfth Street, Milwaukee, manufacturers of hardware, stampings, etc., have incorporated as the Dornacker & Schafer Mfg. Co., with an initial capitalization of \$15,000, and plan extension of capacity, possibly the erection of a new plant. It will also engage in the manufacture of machinery, tools and mechanical appliances for hardware and novelty shops. The principals are John P. Dornacker, Mathew L. Schafer and Mathias A. Dornacker.

St. Louis

ST. LOUIS, Oct. 25.

WORK is under way by the Moloney Electric Co., 1149 South Seventh Street, St. Louis, on its new plant at Union Street and the Kingshighway, consisting of a main two and three-story U-shaped building, with wings 100 x 600 ft. and 100 x 750 ft., for the production of heavy power transformers. Several electric traveling cranes will be installed. The project will include a power plant. Plans have also been drawn for an auxiliary building, one story, 100 x 300 ft. The entire project will cost close to \$1,000,000 with machinery. The Widmer Engineering Co., Laclede Gas Building, is architect and engineer. The company is oper-

ated by the American Brown Boveri Electric Corporation, 165 Broadway, New York.

Swift & Co., Vandeventer and Papin Streets, St. Louis, meat packers, with headquarters at Chicago, has awarded a general contract to the McKelvey Construction Co., 3500 West Pine Boulevard, for a one-story machine shop, 90 x 100 ft., to cost about \$30,000.

The Atlas Tack Co., St. Louis, with headquarters at Fairhaven, Mass., has acquired the plant and business of the St. Louis Trunk Hardware Mfg. Co., St. Louis, and will consolidate with its plant at 3977 Union Boulevard. It is proposed to continue the line of hardware products as heretofore.

The Missouri-Pacific Railroad Co., Railway Exchange Building, St. Louis, has awarded a general contract to T. H. Johnson, Citizen's National Bank Building, Sedalia, Mo., for its proposed engine house with repair facilities at Nevada, Mo., to cost in excess of \$50,000. E. A. Hadley is chief engineer.

Ovens, power equipment, conveying machinery and other apparatus will be installed in the proposed plant to be erected by the Loose Wiles Biscuit Co., 100 West Eighth Street, Kansas City, Mo., at Pueblo, Colo., to cost in excess of \$750,000 with equipment.

The Springfield Ice & Refrigerating Co., Springfield, Mo., has plans under way for a three-story cold storage and refrigerating plant, 86 x 110 ft., to cost \$50,000 with equipment. Brutus Gundlach, 110 East Forty-second Street, New York, is architect; Ophuls & Hill, 112 West Forty-second Street, New York, are engineers.

The Pasteurine Chemical Co., 612 North Seventh Street, St. Louis, is establishing a new plant and contemplates the purchase of steel enameled tanks, bottle washing and filling machines and other equipment. The entire project is reported to cost in excess of \$35,000.

The Atchison, Topeka & Santa Fe Railway Co., Topeka, Kan., and 80 East Jackson Boulevard, Chicago, has awarded a general contract to the George H. Seidhoff Construction Co., Newton, Kan., for a new rail mill and one-story addition to its frog shops at Newton, 80 x 100 ft., to cost \$55,000.

The Standard Ice Co., Little Rock, Ark., will build a one-story ice-manufacturing plant at North Little Rock with capacity of 100 tons per day.

Gulf States

BIRMINGHAM, Oct. 25.

PLANS have been approved by the Louisiana & Northwest Railroad Co., Shreveport, La., for extensions at Homer, La., consisting of a one-story machine shop, 55 x 90 ft.; one-story coach shop, 30 x 288 ft., and car shed, 60 x 72 ft., to cost in excess of \$75,000 with equipment. E. R. Bernstein, Shreveport, is vice-president and general manager.

The City Council, Brownsville, Tex., will soon have plans drawn for extensions in the municipal electric power plant, including the installation of additional equipment. A portion of a \$500,000 bond issue, recently approved, will be used for the project.

The Pan-American Petroleum Co., New Orleans, A. N. McKean, chief engineer, is said to be planning the construction of a new storage and distributing plant at Pensacola, Fla., to cost in excess of \$65,000.

The Common Council, Boerne, Tex., will install a pumping plant in connection with a proposed municipal waterworks, for which a bond issue of \$60,000 has been approved.

The Yolande Coal & Coke Co., Brown-Marx Building, Birmingham, is planning the purchase of coal-mining machinery. It is also in the market for one or more hoisting engines. J. B. McClary is president and general manager.

The Micolithic Co. of Texas, Inc., Collado, Tex., has begun work on a new plant for the development of mica properties, about six miles from Collado. The entire project is reported to cost in excess of \$75,000. A railroad is being built to Collado. F. H. Lawson, Republic Bank Building, Dallas, Tex., is representative for the company.

George W. Scheuing, 1018 Wyoming Street, San Antonio, Tex., is considering the establishment of an enameling plant. Inquiries are being made for equipment.

The Valley Electric & Ice Co., San Antonio, Tex., is contemplating the erection of a new ice-manufacturing plant at Point Isabel, Tex., with machinery to be electrically operated. It is estimated to cost close to \$65,000.

The L. H. Gilmer Co., Keystone and Cottman Streets, Philadelphia, Pa., manufacturer of transmission belting, has awarded a general contract to the Lagrange Lumber & Supply Co., Lagrange, Ga., for its new mill at Shreveport, La., to cost \$500,000 with machinery. The L. H. Gilmer Co. of Louisiana, Inc., has been formed to operate the plant. Ludwell Gilmer heads both companies.

The Board of Education, Gainesville, Fla., plans the installation of manual training equipment in its proposed new junior high school estimated to cost \$450,000, for which bids have been asked on a general contract. Edward & Sayward, 101 Marietta Street, Atlanta, Ga., are architects.

The New Orleans Public Service, Inc., 201 Barronne Street, New Orleans, has awarded a general contract to J. Petty & Son, Godchaux Building, for a two-story service and mechanical works to cost \$50,000, to comprise meter shop, machine shop, jobbing and service departments.

The Empire Brick & Tile Co., Ceramic, Ala., recently organized, has begun the construction of a new plant, to cost close to \$75,000 with equipment.

The Unedus Lumber Co., Unedus, La., has inquiries out for a geared locomotive about 50 tons capacity.

The Board of Public Utilities, Fort Worth, Tex., C. A. Winder, supervisor, has plans under consideration for a new municipal electric power house to be equipped with either gas or oil-operated engine, generator, exciter and auxiliaries.

Canada

TORONTO, Oct. 25.

MACHINE tool sales continue in fair volume, and inquiries are beginning to make their appearance for equipment for new shops under construction. While the bulk of orders is for new tools of labor and time-saving types, a stronger demand is reported for used machines.

McCaskey Systems, Ltd., Galt, Ont., will enter into the manufacture of steel fireproof safes and a new type of adding machines. An addition to its plant is contemplated early next spring.

Link-Belt, Ltd., 265 Wellington Street West, Toronto, has purchased three acres at Eastern Avenue and Leslie Street, where it proposes to start work next spring on the erection of a plant 80 x 235 ft., three stories. It is the intention to erect the first unit for the manufacture of chain only, to be followed later by a machine shop and foundry. Considerable new equipment will be required. E. C. Burton is manager.

Construction on the paper mill at Limoulu, Que., for the Anglo-Canadian Pulp Co., is expected to begin shortly. The total cost of the building, including equipment, will be about \$17,000,000, and when completed the mill will have a capacity of 480 tons of paper per day.

Mahoney & Austin, architects, Quebec Street, Guelph, Ont., are preparing plans for an addition to the works of the Guelph Stove Co., York Road, estimated to cost \$140,000.

The Nova Motors, Ltd., Doyle Street, Halifax, N. S., are having plans prepared for the erection of a garage and repair plant to cost \$50,000. D. F. Saxon, Tramway Building, is architect.

The Dominion Truck Equipment Co., South Street, Kitchener, Ont., is building an addition to its plant at a cost of \$15,000.

The Auto Specialty Co., Tecumseh Road, Windsor, Ont., has let contract to the S. E. Dinsmore Co., Park Building, for an addition.

The Vancouver Trunk & Bag Co., 1424 Charles Street, Vancouver, B. C., will build an addition to its factory to cost \$30,000 with equipment.

Pacific Coast

SAN FRANCISCO, Oct. 20.

THE Pioneer Rubber Mills, Inc., Pittsburg, Cal., has awarded a general contract to Lindgren & Swinerton, Inc., 225 Bush Street, San Francisco, for its one-story mill, 100 x 350 ft., to cost \$100,000 with machinery. Benjamin G. McDougall, 353 Sacramento Street, San Francisco, is architect.

The American Laundry Machine Co., Los Angeles, has awarded contract to Bavin & Burch, Inc., 173 East Jefferson Street, for a new three-story plant, 90 x 90 ft., to cost close to \$90,000 with equipment. Headquarters of the company are at Norwood Station, Cincinnati. A. Godfrey Bailey, Hillstreet Building, Los Angeles, is architect.

R. H. Orr, Corporation Building, Los Angeles, architect, will soon take bids for a six-story automobile service, repair and garage building, 100 x 275 ft., to cost \$325,000 with equipment.

The Puritan Ice Co., Lompoc, Cal., is completing plans for the construction of a new one-story plant, estimated to cost \$160,000 with machinery.

The National Paper Products Co., San Francisco, J. D. Zellerbach, president, has awarded a general contract to

Barrett & Hilp, 918 Harrison Street, for its one-story plant at Southgate, near Los Angeles, totaling 120,000 sq. ft. of floor space, estimated to cost \$300,000 with equipment. Ellison & Russell, Pacific Building, San Francisco, are engineers. V. D. Simons, Tribune Tower, Chicago, is consulting engineer.

The Rothert Steel Corporation, Seattle, recently organized, temporary address care of the Seattle Chamber of Commerce, has plans under way for a new works, to cost about \$200,000 with equipment. James A. Moore is in charge of details.

In connection with a budget for municipal improvements during the coming year, the City Council, Aberdeen, Wash., has approved a fund of \$2,000,000 for a proposed hydroelectric municipal power plant, for which plans will soon be completed.

Walter E. Small, 1022 Santa Fe Avenue, Los Angeles, has plans for a new one-story machine shop, to cost close to \$20,000 with equipment.

The Griffin Wheel Co., 707 West Seventh Street, North, Salt Lake City, Utah, manufacturer of railroad carwheels, has begun the construction of one and two-story foundry, 130 x 230 ft., to cost in excess of \$100,000 with equipment. The general contract has been let to the Jacobsen Construction Co., Electric Union Depot Building.

The American Hammered Piston Ring Co. has moved its San Francisco offices from 931 Larkin Street to larger quarters at 677 Folsom Street, where a warehouse is also maintained. T. Latimer Ford, zone manager, is in charge.

The Los Angeles Valve & Equipment Co., 2741 Compton Avenue, Los Angeles, has purchased a site at Indiana and Milford Avenues for the erection of a new plant, consisting of a two-story main building, foundry, machine shop and pipe shop. The total investment will amount to \$350,000. The company manufactures fittings, valves and equipment for oil refineries and fabricates pipe.

Foreign

THE Municipal Council, Sao Joao d'El-Rey, State of Minas Geraes, Brazil, has plans for the construction of a new hydroelectric generating station on the Grande River, with initial capacity of about 4000 hp., which will be doubled later. The American Consulate, A. Gaulin, consul general, Rio de Janeiro, Brazil, has information regarding the project.

The New Zealand Government Railways, Wellington, is asking bids until Dec. 10 for a number of induction motors and auxiliary electric power equipment.

The Mexican Panuco Oil Co., 36 Wall Street, New York, has concluded negotiations with the Guatemala Oil Exploration Corporation, Guatemala, for the exploration and development of more than 4,000,000 acres of its oil-bearing lands in Guatemala. The D'Arcy Exploration Co., Ltd., will carry out the work for the last noted organization, including drilling of wells, installation of oil rigs, pumping and distributing equipment, etc. Operations will begin soon.

The Compania Nacional Hidroelectrica, San Jose, Costa Rica, has completed plans for the construction of a new hydroelectric power house and will proceed with the project at an early date. The American Consulate, Roy T. Davis, American Minister, San Jose, has information regarding the project.

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Plans are being completed for the construction of a commercial aerodrome on a large acreage in Wangen, near Dubendorf, the military flying field, Switzerland, to include repair and conditioning shops and other departments. An appropriation of \$66,940 has been arranged for the project. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reference Switzerland, No. 223100; also at the American Consulate, James R. Wilkinson, consul, Zurich, Switzerland.

The Unterelbe Power & Light Co., owned and operated by the city of Altona, near Hamburg, Germany, is disposing of a bond issue in the United States through A. G. Becker & Co., 54 Pine Street, New York, totaling \$2,500,000, the majority of the fund to be used for extensions and improvements and the installation of additional machinery.

Industrial Finances

Net earnings of Fairbanks-Morse & Co., for the quarter ended Sept. 30 totaled \$813,000, equal after preferred dividends to \$1.85 a share on the 135,000 shares of common stock outstanding. This compares with a net of \$931,908, or \$2.17 a share, on the common in the third quarter of 1925. Net earnings for the first nine months of this year were \$2,446,000, equal after preferred dividends to \$5.57 a share on the common stock as compared with \$4.91 a share earned in the first nine months of 1925.

The Colorado Fuel & Iron Co. reports for the quarter ended Sept. 30, last, a deficit of \$288,474, after all charges, compared with a net profit of \$692,646 in the last preceding quarter and a deficit of \$186,334 in the third quarter of 1925. For the nine months ended Sept. 30, 1926, net income totaled \$1,586,286, or \$4.28 a share on the common stock, against \$2.76 a share in the corresponding period of 1925.

Sales billed by the Western Electric Co. for nine months ending Sept. 30 totaled \$188,123,000 compared with \$176,203,000 in 1925. Orders received during the first nine months of 1926 aggregated \$182,721,000 compared with \$182,006,000 during the corresponding period of 1925. Orders on hand Sept. 30, 1926, amounted to \$85,417,000 compared with \$92,339,000 on Sept. 30, 1925.

The Universal Pipe & Radiator Co., New York, reports a net profit of \$342,488.67 for the third quarter ended Sept. 30, 1926, making the total net earnings for the year \$926,537.

The Virginia Iron, Coal & Coke Co., Roanoke, Va., operated for the third quarter of 1926, at a profit of \$36,382.51. This reduces the total loss during the nine months ended Sept. 30 to \$13,251.11.

The statement of sales and net earnings of the General Electric Co. for the nine months of 1926, ended Sept. 30, shows that the net sales totalled \$229,638,216 and the profit available for dividends on common stock and surplus to be \$31,051,620. Operation costs amounted to \$203,690,909, which left the income from sales at \$25,947,307. Sundry income yielded \$5,818,365.

New Trade Publications

Industrial Heating.—Buffalo Forge Co., Buffalo. Catalog 466 of 24 pages explains Buffalo unit heaters and their applications, with diagrams. The different types are described and their best uses pointed out.

Ovens.—Paul Maehler Co., Chicago. Bulletin 16 of 52 diagrammed and illustrated pages, deals with three types of conveyor ovens; horizontal continuous, semi-continuous or intermittent, and multiple pass. The bulletin explains the character of materials used in Maehler ovens and the variations in each type.

Electric Motors.—Ohio Electric & Controller Co., Cleveland. Twelve-page booklet explains by means of diagrams and illustrations the uses of alternating current single phase motors and direct current, shunt wound motors. A table of the horsepower of the various motors is given.

Crucibles.—Plumbago Crucible Manufacturers' Publicity Bureau, New York. Pamphlet of 10 pages describes the importance of crucibles, the proper methods of caring for them by using a storage oven, and inexpensive means of making storage ovens.

Cork Foundations.—Cork Foundation Co., New York. Four-page folder tells interesting facts concerning cork foundations and the desirable effects derived from the absorption of noise and vibration.

Ball Bearings in Motors.—Fafnir Bearing Co., New Britain, Conn. A small magazine of 32 pages describing at length, with the help of generous illustrating the use of ball bearings in motors and economical methods of usage.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

The Delphic oracle would get a severe headache trying to answer some of the questions asked of us. Here is a sample.

A small manufacturer of radio equipment writes that business is hopeless; assets are "practically nothing"; liabilities are thriving, and creditors are kicking.

"What shall we do?" he asks.

To our mind, answering this question is as superfluous as telling a man how to conduct himself when seasick. He'll do it without advice.



The world's record in high-power magnification is said to be the magnifying of a piece of steel 15,500 diameters. We saw the photograph, but it did not impress us. We expected to be able to count the atoms in each molecule, and even spot a few electrons. What we saw looked like an airplane view of the Klondike on a foggy day.



The last of the Mohicans. Time was when Manhattan Island was a mighty gray iron foundry center, but high wages and soaring land values have taken their toll relentlessly year by year. So that now but one iron foundry is left.

August Mietz of 87 Elizabeth Street is the iron foundry industry of Manhattan Isle.

A Federal health study of defective vision, embracing a ten-year period, reveals that post office and garment workers show the highest percentage, according to an announcement by the Eyesight Conservation Council of America. Some 10,000 male and 20,000 female workers were examined by officers of the United States Public Health Service. The industries surveyed were pottery, post office, glass, gas, foundry, steel, chemical, cement, cigar and garment.

Mr. Dun's social register lay before us. We were consulting its uninviting pages in search of worthy candidates for admission to the sacred circles of IRON AGE subscribers.

There are few tasks duller than this. Twenty pages will cure the most stubborn case of insomnia. But in a little town tucked away in Southern Arkansas, we found an eye-opener. John Lucas runs a confectionery and boiler shop.



Every price change in steel affects the pay envelope of the British steel mill worker, for wage rates are based on selling prices. The price cutter must be unpopular with the labor unions.

A. H. D.